

Biigtigong -
Nishnaabeg
(as submitted)

From: SC / VI (INFC)
Sent: March 7, 2019 12:00 PM
To: JoAnne Michano
Subject: Smart Cities Challenge - Successful Final Proposal Submission

Dear JoAnne,

Congratulations! Your submission is ready to move onto evaluation following a completeness check (per the latest FAQs).

Thank you for your cooperation, patience, and hard work, especially during the past eight months. We are truly honoured to have worked with you and wish you the best of luck in the competition!

On a related matter, we have recently determined that it will not be feasible to post final proposals on the Infrastructure Canada website in a timely manner. Instead, we will take an approach similar to the application stage and publish your executive summary in both official languages on the Infrastructure Canada website with a link to the final proposal on your website. We understand that posting the final proposal on your website is not a requirement contained in the finalist guide so we appreciate your cooperation in facilitating access to your final proposal in an open and transparent way. Please note that the accessibility materials you have prepared for your final proposal will still be helpful in preparing various communications products to promote and share knowledge of your work.

Once you have posted your final proposal on your website, please send us the link if you haven't done so already. If you anticipate that you will be unable to post your final proposal on your website within two weeks, please let us know.

As always, we are happy to answer any questions. The best way to reach us going forward would be at our generic account: infc.sc-vi.infc@canada.ca.

Thank you.

Smart Cities Challenge Team
Infrastructure Canada
infc.sc-vi.infc@canada.ca

ATIA - 19(1)

ATIA - 20(1)(b)

Jacaban2, Evalynne (INFC)

From: John Paul Montano [REDACTED]
Sent: March 6, 2019 2:48 AM
To: SC / VI (INFC)
Cc: Long, Alexander (INFC); JoAnne Michano
Subject: SCC Final Proposal

ATIA-13(1)(e)

Greetings -

Here are the Dropbox links to our Smart Cities Challenge final proposal and finalist video:

(1) SCC final proposal [REDACTED]

(2) SCC finalist video: [REDACTED]

In the event that the above Dropbox links fail, we include the following two links from our own server:

(1) SCC final proposal [REDACTED]

(2) SCC finalist video: [REDACTED]

Miigwech!

JP Montano

COMPLETE CHECK FOR FINAL PROPOSAL

FINALIST: <i>Biigtigong</i>				
ASSESSED BY: <i>Amanda Aizlewood</i>				
VALIDATED BY: <i>Alex Long</i>				
APPROVAL BY: <i>select one: Jenny Tremblay / Eric Poirier</i>				
DATE OF COMPLETION: <i>enter date when all completed boxes are checked</i>				
REQUIREMENTS	COMPLETED	IF NOT COMPLETED, NOTE REASON	GUIDING PRINCIPLES	ACTIONS
SUBMISSION				
Submitted to infc.sc-vi.infc@canada.ca by 23:59 PST on March 5, 2019	<input checked="" type="checkbox"/>		<ul style="list-style-type: none"> No extensions will be granted No exceptions will be made for lateness or technical problems (finalist must be able to show evidence of submission) 	<ul style="list-style-type: none"> # to contact finalist If not resolved, # to flag to DG for decision
Final proposal is submitted	<input checked="" type="checkbox"/>		<ul style="list-style-type: none"> No extensions will be granted There is flexibility on the finalist video until the end of the week 	<ul style="list-style-type: none"> Assessor to save everything in designated folders # to contact finalist if anything is missing If not resolved, # to flag to DG for decision
Finalist video is submitted	<input checked="" type="checkbox"/>		<ul style="list-style-type: none"> There is flexibility on the finalist video until the end of the week 	<ul style="list-style-type: none"> Assessor to save everything in designated folders # to contact finalist if anything is missing If not resolved, # to flag to DG for decision
Preliminary Privacy Impact Assessment or Preliminary Rationale Analysis	<input checked="" type="checkbox"/>	Follow-up required – proof of contact with OPC	<ul style="list-style-type: none"> No extensions will be granted 	<ul style="list-style-type: none"> Assessor to save everything in designated folders # to contact finalist if anything is missing If not resolved, # to flag to DG for decision
FINAL PROPOSAL				
Written in one of Canada's official languages	<input checked="" type="checkbox"/>		<ul style="list-style-type: none"> If the final proposal is submitted in a language other than English or French, a companion version in English or French is required from the finalist 	<ul style="list-style-type: none"> # to extract the executive summary from the final proposal and send it to translation (if a French final proposal, send the entire document to translation)
Generally readable (e.g. picture is not covering text, text are not overlapping)	<input checked="" type="checkbox"/>		<ul style="list-style-type: none"> If there are serious formatting issues that hinders readability, the finalist may need to resubmit 	<ul style="list-style-type: none"> # to do a scan of the final proposal and verify that all text and tables, graph, etc. could be read
Text-based and in either MS Word (.doc or .docx) or a fully readable, searchable, and selectable PDF (.pdf) format	<input checked="" type="checkbox"/>		<ul style="list-style-type: none"> Finalist may adjust the format for INFC posting purposes after the deadline 	<ul style="list-style-type: none"> # to verify with Comms if format is suitable for posting, given INFC web accessibility standards If not suitable, # to contact finalist
No longer than 75 pages* (Financial chapter exempted) and in 12 point font	<input checked="" type="checkbox"/>		<ul style="list-style-type: none"> Finalist cannot adjust content after the deadline If the text overall is smaller than 12 point font, INFC will adjust and evaluate within the new page count 	<ul style="list-style-type: none"> # to notify finalist if final proposal is over 75 pages # to notify finalist if INFC had to adjust the font and page count

Contains an executive summary	<input checked="" type="checkbox"/>			<ul style="list-style-type: none"> # to QC and save translated version into the designated folder
Organized by these distinct chapters (not limited to these; not necessarily in the same order): <ul style="list-style-type: none"> Vision Performance measurement Project management Technology Governance Engagement Data and privacy Financial Implementation phase requirements 	<input checked="" type="checkbox"/>	List any other chapters if necessary	<ul style="list-style-type: none"> Finalist must have these chapters Finalist can have more chapters Finalist can change the order of the chapters 	<ul style="list-style-type: none"> If the chapters are not clearly labeled, # to do a light analysis of where the content may be and make a note for the Jury
FINALIST VIDEO				
No longer than five minutes	<input checked="" type="checkbox"/>		<ul style="list-style-type: none"> Finalist may cut down the time for INFC posting purposes after the deadline 	<ul style="list-style-type: none"> # to notify finalist if video is longer than five minutes and needs cutting down
Submitted as a file or in a downloadable format	<input checked="" type="checkbox"/>		<ul style="list-style-type: none"> Finalist may adjust the format for INFC posting purposes after the deadline 	<ul style="list-style-type: none"> # to verify with Comms if format is suitable for posting, given INFC web accessibility standards If not suitable, # to contact finalist
CONFIDENTIAL ANNEX (OPTIONAL)				
Submitted if and only if required	<input type="checkbox"/>	No confidential annex		<ul style="list-style-type: none"> # to flag with DG if confidential annex is lengthy

Biigtigong Nishnaabeg
(Pic River First Nation)

Smart Cities Challenge

Final Proposal Submission

Submitted by:

The Biigtigong Nishnaabeg Smart Cities Team

On:

March 5, 2019

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Executive Summary

Canada is trying to create a smart technology future. Biigtigong Nishnaabeg First Nation is trying to revitalize their indigenous language and culture while preparing their K-12 students for the smart technology future.

By utilizing open source software and results-oriented approaches to facilitate effective online learning, effective online acquisition of their endangered Nishnaabe language, and revitalization of their culture - all as an enhancement to their brick-and-mortar K-12 curriculum delivery model, Biigtigong Nishnaabeg are transforming their youth into better-educated, more employable, better-grounded, and more holistically Nishnaabe people.

The graduates of their K-12 curriculum will be able to nearly-completely understand their Nishnaabe language (which is a first-step on the way to becoming a speaker of *any* human language), will have been educated on the interface of the their Nishnaabe worldview with the STEM subject perspectives, will have had increased involvement in real-world traditional Nishnaabe activities in the territory of the Biigtigong Nishnaabeg, will have experienced increased relationship-building with all community members especially in the context of those traditional activities, will be able to code, to build and control robots, and will have been educated in the entire exam preparation curriculum of a general-accepted best-starting point certification to enter the IT working world.

Chapter 1: Vision

Challenge Statement Vision

Our Challenge Statement reads:

By means of active, cross-generational, technology-empowered, real-world participation in the intergenerational transfer of traditional Nishnaabe knowledge through the medium of our language, and the bilingual delivery of modern K-12 STEM knowledge, our community will transform our youth into better-educated, more-employable, better-grounded, and more holistically Nishnaabe people.

Please see Figure 1-1 for a graphical representation of the “bilingual delivery of modern K-12 STEM knowledge” which we propose in our Challenge Statement.

Outcomes Produced by Carrying Out Our Vision

Our final proposal will carry out the vision of our Challenge Statement and will produce the outcomes laid out in our application.

Figure 1-1: Our bilingual delivery of modern K-12 STEM knowledge.
These proposed augmentations to our current K-12 curriculum are partially rolled-out during implementation year 1, and fully rolled-out at the start of implementation year 2.*

Grade K	Grade 1	Grade 2	Grade 3	Grade 4	Grade 5	Grade 6	Grade 7	Grade 8
Code.org						Python 1	Robotics 1	Robotics 2
2,000 hours of Nishnaabe-language immersion video								
			4 weeks during summer between Grade 8 and Grade 9					
			Co-op pre-requisite					
		Grade 9	Grade 10	Grade 11	Grade 12			
		CompTIA A+						
		1,000 hrs of bilingual STEM video						

* For a rollout schedule of each year of implementation, please see Appendix B.

Our final proposal seeks to achieve the four outcomes listed in our Challenge Statement:

(1) youth who are “better-educated” due to

- a. their having successfully completed a greater number of K-12 STEM subjects post-proposal implementation than they successfully completed pre-proposal implementation; and
- b. their increased preparedness for college and university as a result of their having successfully completed a greater number of K-12 STEM subjects post-proposal implementation than they successfully completed pre-proposal implementation;

This outcome is measurable via these progress indicators:

- Increase in number of K-12 STEM courses successfully completed by K-12 students, beyond what is currently offered in our K-12 curriculum
- Decrease in percentage of K-12 students needing remedial help in STEM subject areas

(2) youth who are “more-employable” in current jobs, as well as in yet-to-be-known types of STEM-related jobs, which require knowledge / expertise in the K-12 STEM subject areas;

This outcome is measurable via these progress indicators:

- Increase in number of K-12 STEM courses successfully completed by K-12 students, beyond what is currently offered in our K-12 curriculum
- Increase in number of K-12 students who have at least a basic ability to code

(3) youth who are “better-grounded” in their Nishnaabe identity due to

- a. their knowledge of our core aadsookaanan; and
- b. their increased participation in our community’s traditional Nishnaabe activities;

This outcome is measurable via these progress indicators:

- Increase in number of K-12 students who know the key concepts expressed in each of our core aadsookaanan
- Increase in number of traditional Nishnaabe activities in which each K-12 student, on average, participates per year

(4) youth who are “more holistically Nishnaabe” due to

- a. their ability to nearly-completely understand our spoken Nishnaabe language; and
- b. their increased participation in our community’s traditional Nishnaabe activities; and
- c. their knowledge of the roles of our Nishnaabe worldview in modern technological society

This outcome is measurable via these progress indicators:

- Number of hours of Nishnaabe language acquired by graduating eighth-graders is at least 2,000 hours
- Increase in number of traditional Nishnaabe activities in which each K-12 student, on average, participates per year
- Number of hours of Nishnaabe-language STEM video successfully completed by graduating high school seniors is at least 1,000 hours

The way in which our final proposal carries out the vision of the Challenge Statement, achieving our four outcomes, is via the following six activities/projects:

(1) **“active participation”**

We mean active in contrast to passive, where active participation includes engaged Khan Academy-style Growth Mindset blended learning pedagogical approaches – approaches which take into account the recent discoveries on how humans beings more effectively learn knowledge in online and hybrid (online and brick-and-mortar, combined) environments; calls to real-world action on our online, mobile-enabled platform (particularly on the eLearning, eAcquisition, and meetup forum functionalities of the platform), online forums, and online community discussions; real-world, hands-on activities undertaken and completed in a group setting, our youth wrapped in the embrace of the community network; strong encouragement to attend community events, with those community events effectively and articulately made known to all community members via our online forums and discussions.

This activity/project achieves the following outcomes:

- **youth who are “more holistically Nishnaabe.”** Community-engagement is a foundational component of our Nishnaabe way of living. Actively participating, not just in social activities – which are, indeed, foundationally important to community vibrancy and individual flourishing – but also being actively engaged in our own learning – both formal and informal – is a key to success in whatever role a Nishnaabe individual plays in the community. Actively participating in the whole of the Nishnaabe community is an imperatively important requisite for one’s wellness as a Nishnaabe person.
- **youth who are “better-grounded” in their Nishnaabe identity.** Our Nishnaabe people cannot be only *knowledgeable* of our social norms and ways of being. This knowledge must be *implemented* in one’s life in order for one to be a whole Nishnaabe person. Similarly, much knowledge can be obtained through the very act of active participation in one’s community. Knowledge and active participation are thus connected. Active participation leads to knowledge. Knowledge, in turn, leads to active participation. In order for a Nishnaabe person, then, to be more knowledgeable – better-grounded – in being Nishnaabe, active participation in the Nishnaabe community is required.

(2) **“cross-generational participation”**

Cross-generational participation means not just youth/students, but community members from the entire span of ages, from all generations.

This activity/project achieves the following outcomes:

- **youth who are “more holistically Nishnaabe.”** Similar to the reasons given in the above section on the active participation requisite for one’s being holistically Nishnaabe, all sectors of our Nishnaabe community must have a space and a place to participate. Each age group brings a diverse set of experiences, gifts, and knowledge to our collective Nishnaabe community, and to the overall wholeness of each of the individuals within the community. The participation of everyone, from all generations, is required for each of us to be holistically Nishnaabe.
- **youth who are “better-grounded” in their Nishnaabe identity.** We Nishnaabe people believe that everyone – no matter one’s age – is a teacher and a contributor to the collective’s knowledgebase. Encouraging and ensuring the participation of all generations

provides a maximally diverse dataset of experience as knowledge, made available to and learnable by each and every Nishnaabe community member who participates in community events. This cross-generational participation leads thusly to better-grounded Nishnaabe community members.

(3) **“technology-empowered participation”**

Technology-empowered participation refers to engagement with the eLearning and eAcquisition functionalities of the Open edX platform; engagement in Open edX’s meetup discussion forums for traditional Nishnaabe activities; online platform discoverability of friends’/relatives’ locations and currently-happening traditional activities in order to encourage students to, in like manner, take part in those made-discoverable activities.

This activity/project achieves the following outcomes:

- **youth who are “better-educated.”** Knowing not just about technology, but being – and being comfortable – in a technology-oriented mindset, versed in the social expectations and norms of this modern way of interacting with our technological world is prerequisite knowledge and an imperatively important education to have. Just being able to navigate this brave new world of technology is a plus on one’s curriculum vitae, and our proposal’s implementation will yield for our Nishnaabe youth exactly that: a better education through the experience of successfully participating in this new technology as a means to better one’s self educationally.
- **youth who are “more employable.”** The technology-empowered participatory tools – the rules of online community engagement – that will benefit our Nishnaabe youth are, in many cases, the precise job skills required to even be considered for a job interview. Online forum etiquette, respecting boundaries of online relationships, being responsive to and responsible for timely replies to online community engagement requests and relationships, and a host of other modern technological communication social norms – the very skills and education that our proposal will instill in our Nishnaabe youth – are what will help prepare our Nishnaabe youth to be effectively and productively employed in today’s – and the future’s – job market.

(4) **“real-world participation”**

Smart technology is an enabling factor, a factor which enables real-world participation – not just online participation, but participation in the real, material world. The world of touchable human beings, hugs, babies, tears, family, and love. Our proposal intends to implement this technology to facilitate and encourage participation in real-world community events.

This activity/project achieves the following outcomes:

- **youth who are “more holistically Nishnaabe.”** Being Nishnaabe means being community-oriented. Participating and being an active, contributing part of the lives of those whom we are networked within our territory is a requirement of our communal approach to effective and productive existence on this earth. Participating in the real world, the material world, of our Nishnaabe community is thus a requirement of being a whole Nishnaabe.
- **youth who are “better-grounded” in their Nishnaabe identity.** Being better grounded means being better educated. And being better educated happens, in part, by being around

the educated and knowledgeable ones. For Nishnaabe people, all activities are a teaching opportunity – and thus a learning opportunity. Being out and about in the community leads naturally to discussions with people more knowledgeable than us, which in turn leads to becoming more knowledgeable ourselves – more educated, and thus better grounded.

(5) **“intergenerational transfer of traditional Nishnaabe knowledge through the medium of our language”**

Our proposal aims to produce 2,000 hours of Nishnaabe-language immersion video, the content of which will be our core aadsookaanan (our sacred stories, our philosophical foundations, the building blocks of our worldview). Our aadsookaanan are, in part, the imperatively important intergenerational knowledge which has been passed on – in story form – for countless generations. The acquisition – language *acquisition* (subconscious) in contrast to language *learning* (cognitive) – of 2,000 hours of a target language yields an individual who can nearly-completely comprehend that target language. The target language in this case is our Nishnaabe language, and it is with this 2,000 hours of immersion video of our aadsookaanan that we intend to create understanders of our Nishnaabe language – understanders who can then go on to successfully complete 1,000 hours of STEM subject non-immersion video (i.e., what we usually refer to in this proposal as ‘bilingual STEM video’), the audio of which is delivered in our Nishnaabe language.

This activity/project achieves the following outcomes:

- **youth who are “more holistically Nishnaabe.”** Being a whole Nishnaabe requires that one be a speaker of one’s Nishnaabe language. While this proposal is not big enough to facilitate that particular outcome, becoming an understander of our Nishnaabe language is, indeed, attainable within the timeframe of this proposal. And, since we are aiming for “more” holistically Nishnaabe, becoming an understander of our Nishnaabe language fits the bill quite nicely. Two points here: (1) being able to understand one’s indigenous/heritage language, for a member of any culture, seems obviously contributory to one’s being more holistically of that culture and identity; and (2) walking around in the world with a headful of knowledge that got into one’s head via a foreign language does not make for a very “holistically Nishnaabe” person. While knowledge and education are important in their own right, it is more holistic for that knowledge and education to have entered one’s head in the medium of one’s own indigenous/heritage language. So, our youth being able to understand our Nishnaabe language which in turn makes possible their learning content of a modern K-12 STEM curriculum delivered in the medium of our Nishnaabe language is a powerful contributor to their becoming more holistically Nishnaabe.
- **youth who are “better-grounded” in their Nishnaabe identity.** Knowing about one’s cultural identity is self-evidently important to one’s wholeness. But, knowing the main tenets of the core philosophies of one’s culture is absolutely key to one’s being well versed in the oral/written stories/literature of one’s culture – especially when one considers the importance of learning this information through the medium of one’s language. Learning the main ideas expressed in our Nishnaabe aadsookaanan, through the medium of our Nishnaabe language, produces Nishnaabe youth who are more knowledgeable of, thus better-grounded in, their Nishnaabe identity.

(6) “bilingual delivery of modern K-12 STEM knowledge”

This activity/project refers to the combination of our English-language K-12 STEM curriculum and the 1,000 hours of bilingual (Nishnaabe-language and English-language) STEM video. Please see Figure 1-1 for a graphical representation of this post-augmented curriculum. Our bilingual STEM video will, in part, teach our grade 9-12 students about the role of our Nishnaabe worldview in modern technological society. In particular, our bilingual STEM video will show that there is no conflict in the explanations provided by modern-day STEM and our Nishnaabe worldview. More specifically, our bilingual STEM video will enlighten our students about the relationship between the teachings of our aadsookaanan (which we can refer to with more culturally-neutral terminology as ‘allegorical narrative,’ or simply ‘mythology’) and STEM: the role of science is to explain/show/teach what *is*; the role of mythology is to explain/show/teach *why* (metaphysically why) something is.

For example, the scientific explanation of lightning and thunder (that lightning is a huge electrical discharge that flows between clouds, from a cloud to air, or from a cloud to the ground; and that thunder is in turn caused by lightning), and our Nishnaabe worldview explanation of this same phenomenon (that thunder beings are engaged in an eternal battle with the great underwater lynx; an allegory for the eternal battle between good and bad). Only in modern times have these two traditions (i.e., mythology and science) been viewed by some as ‘in conflict,’ or ‘in competition.’ Historically, however, throughout the world’s indigenous societies, at least, mythology has made science more culturally fitting – not tried to compete with, nor replace the role of, science.

Mythology has *not*, historically, tried to do the work of the STEM fields. Mythology and STEM have, historically, been partners in explaining the world around us in a culturally-appropriate – and usually quite poetic – manner. In similar fashion, this is the function of our bilingual STEM video, and the role of our bilingual delivery of modern K-12 STEM knowledge, in general: to explain the scientific, material world around us in a culturally-appropriate - and usually poetic – manner. This activity/project achieves the following outcomes:

- **youth who are “better-educated.”** The need of this generation of K-12 students for a solid STEM subject area education is undeniable. One need only browse the course descriptions or syllabi of almost any college/university curriculum to find the very long list of requisite technology, math, science, programming knowledge for those majors and academic program paths. Providing our youth with thirteen years of a modern, K-12 STEM curriculum will provide them with the tools, knowledge, and mindset to succeed in the increasingly demanding curriculum of this modern technologically-driven world.
- **youth who are “more employable.”** For reasons similar to the ones given in the above paragraph, our youth who have successfully completed our bilingual, modern K-12 STEM curriculum will not only be better prepared for college and university. The college and university curriculums are being designed, in part, to produce graduates who are more employable in this technologically-driven world and job market. Our youth, having completed such solid preparation as provided for them by our K-12 STEM curriculum, will thus be more employable. And, not only after college/university; but, also in the high-school graduate job market, as well.

- **youth who are “more holistically Nishnaabe.”** One’s having been educated in a particular subject area is an accomplishment on its own. Having been educated in a particular subject area in the medium of one’s indigenous/heritage language, with that education couched in the worldview and perspective of one’s mythology and culture, is an even greater accomplishment; and, an accomplishment contributing greatly to one’s wholeness as a member of that language community.

The achievement of our six activities/projects, and their consequent four outcomes, are enabled by the creation of an online, mobile-enabled platform able to carry out the following three functions. We have chosen the Open edX platform for this purpose. (While we originally envisioned having three separate platforms/applications for each of the three functions, we have, during the finalist phase, opted to wrap all three of these functions into one ‘Learning Management System’ (LMS) platform, namely Open edX.) Open edX is open source software and facilitates the production of materials to be made available under a Creative Commons license. The three functions being fulfilled by the Open edX platform are:

- (1) **eLearning.** Mobile-enabled eLearning functionality is built into Open edX with open source technologies and languages, enabling interoperable, scalable, and replicable results by any other community or organization choosing to implement a similar platform. eLearning functionality will facilitate the collection of real-time data on all aspects of community-based, online, collaborative learning, and the storage of that data in an open source database backend enabling other departments and organizations within our Biigtigong Nishnaabeg community to seamlessly access and utilize this data.
- (2) **eAcquisition.** Mobile-enabled eAcquisition functionality will be nearly identical to our eLearning functionality, but will have the added responsibility of enabling the effective acquisition of our Nishnaabe language. As our community makes a strong distinction between language *learning* (a conscious, cognitive process) and language *acquisition* (which occurs subconsciously), we need to keep these two functionalities independent of each other so that each one’s unique pedagogical approach can be implemented effectively.
- (3) **meetup forum.** Mobile-enabled meetup forum functionality will serve as the central ‘online gathering’ place which will facilitate the bridging and interfacing of the digital world with the material, real world. All community members will have access to each other via this online gathering place. This functionality within Open edX is where our youth who are hoping to attend a particular traditional Nishnaabe activity can express their interest to do so. Other community members then have the ability to invite our youth along to that event. Likewise, community members who are planning an activity can now express their intentions in the meetup forum functionality of Open edX thereby providing additional options for our youth to take part in while remaining in the embrace of the real-world community network.

Data: Outcomes are Reflective of True Needs of Community

Our outcomes are reflective of the community needs. We conducted extensive community engagement sessions throughout the development stage of our proposal. These sessions were aimed at specific stakeholders and the community at large, including our off-reserve members. Through presentations, discussions, surveys, small group meetings, family meetings, luncheons, social events, we successfully engaged a large number of our community. 221 unique members attended at least one of our engagement sessions and 121 individuals completed our extensive community survey. Chapter 6 provides the findings from our engagement sessions and how community input improved our proposal.

Outcomes are Ambitious and Achievable

Firstly, there exist extremely high unemployment rates for our youth, independent of industry. When we consider only the STEM fields, these unemployment rates for our youth are absurdly high. Our proposal will help to alleviate this.

Secondly, this proposal will move Nishnaabe people from being mainly passive consumers of technology to being active, effective STEM-educated administrators, managers, and users of data and connected technology who are able to achieve meaningful outcomes for themselves, their community, and other communities.

Thirdly, our outcomes are ambitious because we, similar to other Nishnaabe/indigenous communities, have only one high-proficiency first-speaker of our dialect. A survivor of the Canadian Indian residential school system, she is 82 years old. We have only another two medium proficiency first-speakers of our dialect. They are both in their 70s. When they leave, so will our dialect.

So, over the last five years, we have been hurriedly working with a high-proficiency second-language speaker of a related dialect. He has spent the last five years working with our elders to reconstruct our dialect. (Our Biigtigong dialect's noun declension charts, verb conjugation charts, and dictionary are all currently available on our language website, biigtigong.com, under a Creative Commons license). He is now able to 'grammar bridge' into our Biigtigong dialect from the dialect which he originally acquired; he is thus able to speak and write in our Biigtigong dialect. It is his Nishnaabe-language audio which will be heard on all 3,000 hours of video which our proposal aims to produce.

It is important for us to note here that the method which he used to become a speaker of the Nishnaabe language – he began acquiring the Nishnaabe language almost 20 years ago when he was in his 30s – is the very method of second language acquisition that we're using in our proposal to transform our Biigtigong youth into understanders of our dialect.

Whether we consider the Royal Commission on Aboriginal Peoples, the work of the Truth and Reconciliation Commission, the United Nations Declaration on the Rights of Indigenous Peoples, or that the United Nations General Assembly has declared 2019 the International Year of Indigenous Languages (IYIL2019), we have before us – “us” being Canada and we Biigtigong Nishnaabeg – an ambitious *opportunity*, indeed. An opportunity to move forward. Together. As partners. Collaboratively, we can produce the means by which Nishnaabe people can *forever* be able to become understanders (on their way to becoming speakers) of the Nishnaabe language. That's pretty ambitious.

Our outcomes are achievable because a community such as ours, Biigtigong Nishnaabeg, who has for many, many generations been healing, repairing, reconstructing, and unendingly facilitating the education and holistic Nishnaabe being of each and every one of our community members, as a collective unit, as a community, is quite the solid foundation on which to implement this proposal. The outcomes sought by this proposal are quite achievable, indeed.

Outcomes are Meaningful for the Community and Residents

Our proposal has been met with overwhelming support from our community since the very start of our Smart Cities journey. Biigtigong Nishnaabeg has been working on the revitalization of our language and aadsookaanan many years before we started work on this Smart Cities Challenge. Our Smart Cities final proposal further facilitates profoundly meaningful goals of the community which were set in motion decades ago.

Our chief, Duncan Michano, has, for many years, shared with a great number of people his vision of educating our youth in the ways of physics, engineering, quantum mechanics, computer science, and coding. There has been a marked increase in the community's excitement around these conversations in the last four or five years in particular. Especially for our young Nishnaabe people. (For example, we already have elementary school-age kids in our community who have gone off to earn a certificate in LEGO Robotics and Programming offered by the Digital Media Academy at University of Toronto.)

Our children and youth have always been the center of our Nishnaabe society. They are, in a very real way, our future. They carry our entire ancient past, and our ongoing present, into the unknown, the future. It is difficult for our community to imagine something *more* meaningful than the betterment of our youth in this modern technological society while helping them to carry with them, as they move forward into the future, our Nishnaabe language and our Nishnaabe worldview.

The outcomes of our final proposal are, *indeed*, meaningful for our community and our residents.

Our Proposal is Well-Suited to a Smart Cities Approach

Our proposal is very well-suited to a smart cities approach.

Smart Cities Approach Principle: Openness

By making our language accessible for the first time through an online platform that can be accessible by anyone at anytime. We will also provide a model for integrating immersion education and STEM education into a standard curriculum. K-12 STEM learning can augment immersion-based cultural learning and immersion-based cultural learning can augment K-12 STEM learning.

By preserving as *open* data, a subset of our language in a certain format (i.e., in the format of *understandable* language which is able to produce understanders of our language after 2,000 hours of viewing), we not only facilitate the survival and thriving of our language into the future, we are also providing a model for other First Nation communities – as well as other communities and groups – to do the same. This initiative will strengthen the relationship between residents and government and public organizations and will help to fulfill Canada's goal of reconciliation with First Nation communities.

Smart Cities Approach Principle: Integration

Currently, our language and aadsookaanan are at risk of being lost. Through the use of connected technology, and by recording this data – including much of our raw cultural data being preserved/made-available on Open edX – we are ensuring that our community knowledge is maintained for our Biigtigong Nishnaabeg generations to come, for the benefit of Canadians, and for the benefit of the world. By this democratization of cultural knowledge, we are thus breaking down silos that exist even in our traditional societal structures. Similarly, modern-day administrative and learning management roles of K-12 teachers, of parents, of elders, and of governmental leadership, are also all further facilitated by the increase in frictionless availability of data made possible via the removal of data silos.

Smart Cities Approach Principle: Transferability

We have provided an open source, standardised, and transparent approach to integrating immersion-based cultural education and STEM education into any school curriculum - all of the videos we are producing can be overdubbed in any other language. The approach to building community capacity, through embracing language, culture and STEM can be replicated across the country regardless of a community's size or resources.

This approach is not limited to one language only. The language in question could also be Cree, Mohawk, French, or Italian, for example. There may be a need across the board - in perhaps most, or even all,

cultures - to augment STEM learning with language-based cultural education; a need to combine, merge, and interface the digital connections with physical community. In our approach in this proposal, the meetup facilitation functionality of Open edX achieves this. Our proposal moves us into the future by embracing and continuing to facilitate the merging of the digital-world and the real-world in order to create a *truly* smart city that uses data, digital connection, and an online platform to enable intergenerational transfer of knowledge – both traditional language and STEM knowledge and education – education to create better-educated, more employable, better-grounded, and more holistically Nishnaabe(in our case) people.

Our approach is suitable for communities of any size, any location, any level of resources, and is easily replicable and scalable. We see our proposal as an ideal ‘onboarding’ approach for any community – almost regardless of access to technology-trained staff – to a more STEM-infused culturally-based/appropriate/infused community. Implementing the bleeding-edge STEM technologies – as a first step - is not, in our opinion, viable for many communities.

The approach we are taking – and advocating for – in our final proposal is not unlike the strategy of early-years Netflix as that company disrupted the DVD-rental industry. Netflix’s secret weapon in their successful venture? The post office! Not the most modern of ‘technology,’ to say the least. While Netflix, of course, employed a host of other approaches and tactics, beyond its utilization of the post office, the company’s achieved outcomes are still remarkable given the common ‘technology’ they employed. We view our smart cities final proposal in a similar light. We have deliberately chosen to deliver *bleeding-edge, four-star quality* outcomes by utilizing *common* smart technology, instead of delivering *common* outcomes by utilizing *bleeding-edge, four-star quality* smart technology. We believe that this approach will maximize the replicability of our approach - and the spread of smart technology - across Canada.

Our proposal is an onboarding approach to smart cities. Not every community has the resources, staff, equipment, Wi-Fi access, etc. to implement cutting-edge smart technology. There is a need to build STEM *knowledge* first, through the method developed in our proposal. What good are sensors and data collection if we do not have the knowledge and appropriate cultural lenses to extrapolate meaning from them? Creating a digitally-literate population is, in our opinion, absolutely essential to ensuring long-lasting smart cities - not just a fad technology that is used for a short period of time.

Lasting and impactful community change, through STEM education, and reconnection with culture through language, along with the use of common, newbie-friendly smart technology is of key importance in the overall strategy of facilitating transferability. Our approach to integrating STEM education into a K-12 curriculum is, indeed, transferable; it can be implemented in any school across the country.

Smart Cities Approach Principle: Collaboration

This technology will enable cross-generational and cross-cultural collaboration as we build a future of digitally-literate and more culturally whole youth who will lead the smart cities of tomorrow across Canada.

Progress During Finalist Phase

Progress toward our outcomes has already been achieved during the finalist phase. We:

- organized and facilitated community consultation events, each with a particular community sector focus
- implemented some changes in organization structure: established teams, roles and responsibilities, etc.

- begun several pilot projects: story writing; aadsookaanan reconstruction; and Waawaa video production
- utilized community surveys to determine several baselines
- set up a framework for data collection and baseline measurement of progress
- produced prototypes of immersion video overdubbed with audio of Biigtigong's dialect
- developed some tools to assess staff training needs
- researched approaches to and formalized a framework for the reconstruction of our aadsookaanan
- successfully piloted Makey Makey, Scratch, and Code.org at our elementary school
- formalized our partnerships
- continue our community engagement sessions with our off-reserve and on-reserve members
- pilot with our elementary school staff and students a sampling of online classes
- further develop the interfacing of our Nishnaabe approach to learning and the Growth Mindset Approach
- continue 'Waawaa' immersion video production, evaluation, and instructor professional development

Chapter 2: Performance Measurements

Strategy

An outcome-based performance approach is a results-based management tool that can be used to guide the selection, development and ongoing use of performance measures. For this project, this strategy will be adopted, which will enable the project team to continuously monitor and assess the results of programs as well as make informed decisions and take appropriate mitigation actions should they be required. A success outcome-based performance measurement strategy will also provide effective and relevant departmental reporting on the program and ensure that credible and reliable performance data is being collected to effectively support evaluation.

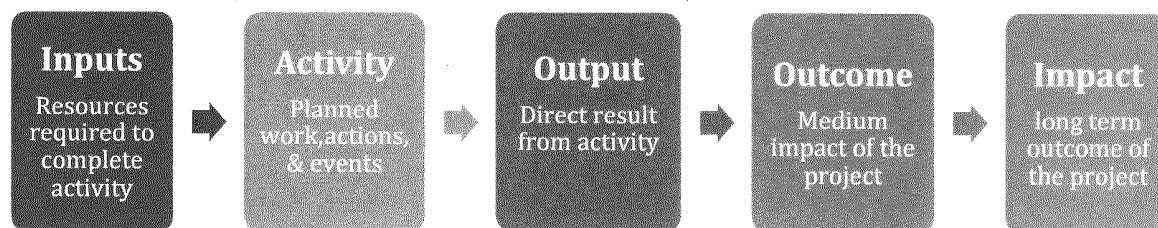
Approach

The key to achieving the desired outcomes of this project is to set clearly defined goals which are achievable for the timeline of this project. This will involve defining metrics that can be set to clearly measure the project's success, as well as to identifying any deviations which can then be quickly remedied. The metrics to be used for this project will follow the SMART methodology for goal setting, as defined below:

1. The set outcomes of this project are ***Specific***
The desired outcomes for this project are clear, well defined and based upon the specific requirements for the completion of this project.
2. The set outcomes of this project are ***Measurable***
Metrics have been developed to measure the progress of this project. The project team will use these metrics to assess levels of project completion and identify any deviations.
3. The set outcomes of this project are ***Achievable***
The set outcomes of this project were developed by assessing and interpreting relevant data and by receiving input from various experts in relevant fields.
4. The set outcomes of this project are ***Relevant***
The defined outcomes of this project are essential for the overall success of the project and were developed by pinpointing the specific needs of the project and by having discussions and input from stakeholders.
5. The set outcomes of this project are ***Time-Bound***
The outcomes of the project have set target dates for completion based upon required inputs, activities and outputs.

Logic Model for Performance Measurement

A basic logic model will also be used to understand the process of measuring each metrics' impact throughout the project. As shown below performance measures can be depicted linearly, however, it is important to note that for each input and relative activity there will be short, medium and long-term results.



As part of developing our measurement approach, the project team completed a resource assessment which has resulted in the identification and classification of the project's inputs. The project team has also developed an implementation plan for the activities required to achieve the desired outcomes and impacts. Each of these activities has an associated immediate output which will then result in the desired outcomes and impacts that are essentially the goals of our project. Further details on the aforementioned activities (resource assessment, implementation planning, and objective/outcome setting) are included in the Project Management Plan, presented in Chapter 3. The project specific components of the above logic model are summarized in the following sections:

Inputs:

Project Inputs can be defined as financial and non-financial resources used to complete project activities, produce outputs and achieve outcomes. Our project inputs include, but are not limited to, the following:

- Project team members (Chief and Council, Elders, Subject Matter Experts, Project Manager)
- Teaching Staff
- Procured software and technology (i.e. code.org curriculum, Open edX platform, etc.)
- Financial Contributions

Activities:

Project activities can be defined as the planned work, actions, and events that our project team will undertake to produce one or more outputs. The activities to be undertaken as part of this project include:

- Record written aadsookaanan (sacred stories)
- Produce Waawaa video
- Overdub videos in second language (Nishnabeweemen)
- Produce STEM videos
- Implement K-12 curriculum augmentation
- Upload all data and materials on Open edX

Outputs:

Outputs can be described as the direct result of the planned activities.

- Record of aadsookaanan (sacred stories)
- 2,000 hrs of immersion video
- 1,000 hrs of STEM video
- STEM curriculum framework and materials

- Digitized publicly accessible version of the above.

Outcomes:

Outcomes can be described as the medium-term impact of the project.

- Increase in number of K-12 STEM courses successfully completed by K-12 students,
- Decrease in percentage of K-12 students needing remedial help in STEM subject areas
- Increase in number of K-12 students who have at least a basic ability to code
- Increase in number of K-12 students who know the key concepts expressed in each of our core aadsookaanan
- Increased annual participation rate in number of traditional Nishnaabe activities for K-12 Students
- Minimum 2,000 hours of Nishnaabe language acquired by graduating eighth-graders
- Minimum 1,000 hours of Nishnaabe-language STEM video successfully completed by graduating high school seniors

Impact:

Impacts can be described as the long-term outcome of the project. For the Biigtigong Nishnaabeg Smart Cities project this includes impacts to our community as well as to society as whole, as described below:

Community Impact:

- Youth who are “better-educated”
- Youth who are “more-employable”
- Youth who are “better-grounded” in their Nishnaabe identity
- Youth who are “more holistically Nishnaabe”

Social Impact:

- Preserved language
- Preserved cultural teachings
- Model for connecting STEM, and traditional/cultural learning
- Onboarding approach to creating Smart Cities regardless of current resources or capacity.

Indicators & Milestones:

Key Performance Indicators (KPIs) allow project managers to gauge whether the planned activities have been successful. This is measured by how well they have been able to meet the objectives of the project. The four (4) main objectives for the project have been outlined in Chapter 3. The completion of the activities outlined in the implementation plan for this project should satisfy the objectives of the project and should bring tangible value added to the community and society as a whole.

It is important to have both qualitative and quantitative indicators for tracking, measuring and evaluating performance, to capture the holistic perspective of the project goals. It is also important

to select a reasonable number of indicators to ensure that performance measurements are met and accomplished, while not over specifying and removing opportunities that may evolve throughout the project lifecycle.

Quantitative Key Performance Indicators (KPI):

The following section outlines some of the KPIs identified for the performance measurement process of our project. This section details the KPI, the data source and associated responsible resource. The table following this section summarizes this information in the context of associated outputs, outcomes, and target completion dates.

1. Number of aadsookaanan lessons created
2. Number of hours of video produced
3. Number of courses for which curriculum is implemented

The above KPIs are designed to track performance with respect to the outputs for this project. Data will be provided in the form of a summary report to be submitted by the SMEs to the project manager who will then report to the advisory committee on a biannual basis.

4. Number of K-12 STEM courses successfully completed by K-12 students
5. Percentage of K-12 students needing remedial help in STEM subject areas
6. Number of K-12 students who have at least a basic ability to code
7. Number of K-12 students who know the key concepts expressed in each of our core aadsookaanan
8. Annual participation rate in number of traditional Nishnaabe activities for K-12 Students

Qualitative Key Performance Indicators:

1. Teacher feedback and opinions
2. Student feedback and opinions

Other Key Performance Indicators

In addition to the specific KPIs that the project team has identified for tracking performance on specific project outputs and outcome, all outputs will also be evaluated through implementation of financial- and schedule-based KPIs. Financial- and Schedule-based KPIs for reporting on outcomes are less reliable and therefore these KPIs will only be associated with the following project outputs:

1. Estimated Budget vs. Actual Expenditures (Financial)
2. Target Completion Date vs. Actual Completion Date (Schedule)

Source of Data and Reporting Role and Responsibilities

With respect to tracking the Key Performance Indicators listed above, much of the data required including; participation rates, hours of aadsookaanan and STEM video developed, student grades etc. can be collected directly from the open-source online Open edX platform. Clear and concise

reporting of the Key Performance Indicators will also be a vital component when measuring the progress made throughout this project.

Since teaching staff will be responsible for the direct oversight of student's engagement with the curriculum (i.e. Grading), they will play a large role in assessing and reporting on the performance of students and the quality of educational materials developed. Reporting of these performance indicators will then be communicated to the project team for further analysis.

The project team will be responsible for tracking their internal performance, regarding budgeting and scheduling.

Program Outputs and Outcomes	Indicator	Data Source	Frequency	Baseline	Target	Date to Achieve Target	Data Collection Resource
Output 1 Record of aadsookaanan (sacred stories)	# of aadsookaanan lessons created	Report from Elders and Project Team	Bi-annually	0	50	August 2024	SMEs – Elders & Project Manager
Output #2 – Immersion Video	# of hours of video	Report from Video Production Team	Bi-Annually	0	2,000 hrs	August 2024	SMEs - Video Production Team & Project Manager
Output #3 – Bilingual STEM Video	# of hours of video	Report from Video Production Team	Bi-Annually	0	1,000hrs	August 2024	SMEs - Video Production Team & Project Manager
Output 4 - STEM curriculum framework and materials for k-12	# of courses for which curriculum is implemented	Teaching Staff and SMEs	Bi-Annually	No Grades	Grades K-12	August 2024	Teaching Staff
Outcome 1: Youth who are “better-educated”	<ul style="list-style-type: none"> # of K-12 STEM courses successfully completed by K-12 students % of K-12 students needing remedial help in STEM subject areas Teacher opinion (qualitative) Student opinion (qualitative) 	Summary Report from Teaching Staff	Bi-Annually	None	Increase	August 2024	Teaching Staff
Outcome 2: Youth who are “more-employable”	<ul style="list-style-type: none"> # of K-12 STEM courses successfully completed by K-12 students # of K-12 students who have at least a basic ability to code Teacher opinion (qualitative) Student opinion (qualitative) 	Summary Report from Teaching Staff	Bi-Annually	None	Increase	August 2024	Teaching Staff
Outcome 3: Youth who are “better-grounded” in their Nishnaabe identity	<ul style="list-style-type: none"> # of K-12 students who know the key concepts expressed in each of our core aadsookaanan Annual participation rate in number of traditional Nishnaabe activities for K-12 Students Teacher opinion (qualitative) Student opinion (qualitative) 	Summary Report from Teaching Staff	Bi-Annually	None	Increase Reach and obtain Positive Opinion Feedback	August 2024	Teaching Staff
Outcome 4: Youth who are “more holistically Nishnaabe”	<ul style="list-style-type: none"> Minimum 2,000 hours of Nishnaabe language acquired by graduating eighth-graders Annual participation rate in number of traditional Nishnaabe activities for K-12 Students Minimum 1,000 hours of Nishnaabe-language STEM video successfully completed by graduating high school seniors Teacher opinion (qualitative) Student opinion (qualitative) 	Summary Report from Teaching Staff	Bi-Annually	None	Increase Reach and obtain Positive Opinion Feedback	August 2024	Teaching Staff

*All outcomes will also be subject to the financial and schedule based KPIs as described in this chapter and the proposal in general.

Payment Schedule

Understanding that the intent is to develop an outcome-based contribution agreement with Infrastructure Canada, where payments will be triggered by the successful achievement of progress toward outcomes, we have developed a payment schedule that is simple, manageable and associated with the completion of milestones as outlined in detail in Chapter 8.

Risk Management

Identifying risks that may be presented throughout the project lifecycle is an essential component of project management as it allows the project team to proactively establish mitigation strategies to effectively minimize the impact of the risk on the project before it occurs. The table below summarizes a list of potential risks related to the above Key Performance Indicators, as well as the associated mitigation strategies that will be implemented to ensure that the delivery of this content remains effective, up to date, and on schedule.

Risks	Mitigation Strategies
Lag in completing activities could negatively impact project outcomes	Project implementation plan includes Ramp-Up strategy to capitalize on efficiencies in activities
Lack of Student Participation	Incorporation of Immersion and STEM education into existing curriculum provides double-duty lessons to ensure student involvement
Difficulty with Curriculum Implementation	Ramp-up capabilities of Code.org (for example) means that students can be exposed to coding in Grade 5 only, and still proceed to Python in Grade 6, and Robotics in Grades 7 and 8. In other words, the first few years of K-5 curriculum implementation has a significant buffer to include all experience and skill levels. With respect to Grade 6 and above, and experience or previous coding exposure is an improvement on the current curriculum. By the end of the 5-year implementation period, it is expected that any obstacle associated with curriculum implementation will be overcome.
Resources (Human or Technological) are no longer available	Only a few language speakers and Elders can produce aadsookaanan. This highlights the critical nature of this project. The likelihood of any human resources no longer being available is very low, but the impact if this is the case would be significant.
Curriculum becomes outdated	Reliance will be placed on existing websites for STEM education (i.e. code.org). As these are established organizations, that are constantly updating and revising content to better engage youth and other users in this field, there is little chance that this curriculum will become dated. However, SMEs will continuously monitor content and explore alternatives should the desired content become outdated or unavailable.

Chapter 3: Project Management Plan

Introduction

A Project Management Plan (PMP) is used to manage the implementation of a project through the formal documentation of any actions necessary to define, prepare, integrate and coordinate the various project activities. The PMP defines how the project will be executed, monitored, controlled, and closed. Project Management is an iterative process and as such, the PMP acts as a living document, which is progressively elaborated upon throughout the course of a project. As part of the finalist stage, our project team has developed a Project Management Plan (PMP) for the implementation phase of the project that includes the following:

1. Project scope, scheduling, sequencing, and dependencies
2. Resource assessment, including human, material, and financial (e.g. workforce capacity, infrastructure readiness, and related initiatives already underway) that are sufficient and appropriate to the achievement of outcomes
3. Strategies for: Risk identification and appropriate mitigation
 - a. Procurement, including alignment with technology and partnership requirements
 - b. Stakeholders, including analysis of impact and influence
 - c. Communications, including strategies that promote community involvement and transparency and tailor to diverse stakeholders and projects
4. Monitoring, controlling, and reporting strategies and checkpoints for contingencies and course corrections, if necessary
5. Approach to sustaining projects beyond the lifecycle of the Challenge.

The following chapter summarizes our team's Project Management Plan, with reference to the appropriate chapter of the proposal that will provide supplementary information. When proceeding with the project, the information contained within this proposal will be restructured to serve as the various project management materials needed to guide the project team through the implementation of the project and beyond.

Project Scope, Scheduling, Sequencing & Dependencies

The scope of our project includes the development of 2,000 hours of Nishnaabe-language immersion videos, the content of which will be our core aadsookaanan (our sacred stories, our philosophical foundations, the building blocks of our Nishnaabe worldview). It is intended that this will create understanders of our Nishnaabe language who can then go on to successfully complete an additional 1,000 hours of STEM educational video, the audio of which is delivered in our Nishnaabe language. It is worth reiterating that the model being developed can be used for any other language or culture, the idea is to blend STEM education with tradition, to create leaders of tomorrow with a strong connection to their traditions and cultures. For example, the WaaWaa videos can be overdubbed in any language and be just as useful. It is our belief that this is truly a Canadian approach to developing Smart Cities.

This project will move Nishnaabe people from being mainly passive consumers of technology to being active, effective STEM-educated administrators, managers, and users of data who are able to achieve meaningful outcomes for themselves, their community, and other communities. Upon completing high school, our youth will have received more than 2,000 hours of mobile-enabled,

online Nishnaabe-language immersion instruction in all of our core aadsookaanan (our sacred stories, our philosophical foundations, the building blocks of our Nishnaabe worldview).

Additionally, our youth will be nearly-completely able to comprehend spoken Nishnaabemwin, will have attained a basic proficiency in coding and robotics, and will possess a strong foundation in mathematics and science. All STEM subject videos and courses will be available under a creative commons license, in both Nishnaabemwin and in English. All of this education will occur in a blended-learning environment with a strong real-world participation component built into the program. The eLearning functionality of our community's open source, mobile-enabled, Learning Management System (LMS), Open edX, facilitates the learning of the STEM subjects. And, the eAcquisition functionality of Open edX facilitates the acquisition of our Nishnaabe language. The entire educational experience is tied together with the meetup forum functionality of Open edX serving as a bridge between the digital, online world and the material, real world. Our youth are strongly encouraged and empowered to participate not only in online communities, but in the traditional Nishnaabe activities going on in the real-world community thereby bridging the gap between the online and real world. Based on this scope of work, the following project management plan has been developed to guide the project team through the implementation phase and beyond. This planning template can also be utilized by other communities when adopting our onboarding approach to a smart city.

It should be noted that this PMP is based on our approach to develop a smart city through the integrated delivery of our culture, language and STEM education; however, other communities that choose to replicate this approach will be able to tailor their project to reflect their culture and language. The products and outcomes of our project, including templates, videos, and curriculum will be made readily available in an open source and transparent format, to be accessed by any community wishing to replicate our approach to developing a smart city.

Project Objectives:

As previously mentioned, our project seeks to achieve the four (4) objectives or outcomes, listed in our Challenge Statement. These objectives are summarized below but are presented in more detail in Chapter One (1), Vision.

Objectives and Measurable Outcomes:

Objectives	Progress Indicator/Measurable Outcome
1. Youth who are "better-educated"	<ul style="list-style-type: none"> • Increase in number of K-12 STEM courses successfully completed by K-12 students, • Decrease in percentage of K-12 students needing remedial help in STEM subject areas
2. Youth who are "more-employable"	<ul style="list-style-type: none"> • Increase in number of K-12 STEM courses successfully completed by K-12 students, • Increase in number of K-12 students who have at least a basic ability to code
3. Youth who are "better-grounded" in their Nishnaabe identity	<ul style="list-style-type: none"> • Increase in number of K-12 students who know the key concepts expressed in each of our core aadsookaanan

		<ul style="list-style-type: none"> Increased annual participation rate in number of traditional Nishnaabe activities for K-12 Students
4.	Youth who are “more holistically Nishnaabe”	<ul style="list-style-type: none"> Minimum 2,000 hours of Nishnaabe language acquired by graduating eighth-graders Increased annual participation rate in number of traditional Nishnaabe activities for K-12 Students Minimum 1,000 hours of Nishnaabe-language STEM video successfully completed by graduating high school seniors

Scheduling, Sequencing and Dependencies:

To ensure smooth project delivery, project management tools must be implemented. These tools allow the Project Team to understand each task at hand and the relationship, or interdependencies, that they share in reaching project completion. Dependencies show relationships between successive tasks and outline what tasks must be completed prior to beginning another. Using dependencies enables the Project Team to establish a critical path for the project; highlighting key events that must be met to drive the project to completion. This critical path will be depicted visually in the form of a Gantt chart.

Often dependencies result from working with different internal and external stakeholders and, as a result, it is important to establish dependencies before project commencement. As dependencies increase the risk associated with project roll-out, a number of tools and techniques can be initiated to mitigate the effects that they may have.

As a starting point, internal and external dependencies have been considered to determine associated levels of risk. Please refer to subsequent sections and chapters for descriptions of associated risks. Likewise, the project implementation plans for all project components, presented in Appendix A & B, also show dependencies between activities. The Project Team have been, and will continue to be, assigned to specific tasks and respective dependencies. As the project moves forward, it is likely that further dependencies and subtasks will take form. To ensure the timeline is not affected by these changes, Bi-Monthly Project Team meetings will take place to proactively coordinate around these obstacles and re-establish the critical path. These meetings will be identified in the project schedule.

Project Components:

There are four main parts of this project, all to be hosted on the Open edX learning management system:

- 1) E-Learning, K-12 curriculum augmentations
- 2) Meetup forum real-world connections
- 3) eAcquisition, 2,000 hours of immersion video
- 4) Bilingual STEM video - 1,000 hours of STEM course video

1) E-Learning, K-12 curriculum augmentations

With respect to the augmentations to the existing curriculum, the project team has developed a detailed implementation plan to complete the following:

- 1) Implement code.org curriculum in grades k-5
- 2) Implement python curriculum in grade 6
- 3) Implement Robotics curriculum in grades 7 and 8
- 4) Implement CompTIA A+ curriculum in grades 9-12

The project team will rely on existing and proven curriculum for the implementation of the k-12 augmentations. Teachers will be required to incorporate these curriculum augmentations as part of their existing lesson planning process. All curriculum will be implemented via blended learning and growth mindset approaches.

In terms of the implementation schedule, the selected curriculum of code.org (for example), was selected as it provided “ramp up capabilities” meaning that kids being introduced to this curriculum for the first time in grade 5 will be able to complete “ramp up lessons” given that they did not have exposure to the K-4 curriculum. Similar, the 5-year implementation schedule for all other grades and curriculums will follow as similar approach, where necessary.

Please refer to Appendix B for additional information regarding our project implementation process, timelines and outputs for eLearning, K-12 curriculum augmentations project components.

2) Meetup forum real-world connections

The Meet-up functionality of the Open edX platform will enable students and community members to not only connect with the digital community, but also the real-world community, as well as the land and traditional activities. This mobile-enabled meetup forum functionality, provided by Open edX, will serve as the central ‘online gathering’ place which will facilitate the bridging and interfacing of the digital world with the material, real world. All community members will have access to each other via this online gathering place. This functionality is provided directly within Open edX and will provide our youth the opportunity to express their desire to attend a particular traditional Nishnaabe activity. Likewise, community members who are planning an activity will be able to express their intentions in the meetup forum functionality of Open edX, thereby providing additional options for our youth to take part in while remaining in the embrace of the real-world community network. As this is a function of the Open edX Platform, implementation

will be relatively simple, requiring the development and provision of instructions to participants and encouraging participation, as part of our overall implementation strategy.

3) eAcquisition and 4) Bilingual STEM course video

With respect to the eAcquisition immersion video and STEM course videos, the project team has developed a detailed Implementation Plan to complete the following:

- Reconstruct and write our core aadsookaanan
- Produce Waawaa video (2,000 hrs)
- Overdub Waawaa video and/or produce Nishnaabe-language immersion video (live-action or 2D-animated)
- Produce bilingual (Nishnaabe-language and English-language) STEM video (1,000 hours)

Please refer to Appendix A for additional information regarding our project implementation process, timelines and outputs for the eAcquisition and Bilingual STEM Course Video project components.

To summarize, the approach taken in terms of the production of the Waawaa video and Nishnaabe language immersion video and bilingual STEM videos has been to intentionally ramp up production over the course of the 5-year project implementation. The reason for this is to allow for review and critique of the first round of videos to allow the project team to adjust course and make any improvements, as deemed necessary. Likewise, it is anticipated that the production of Waawaa videos will become more effective over the course of the project implementation plan, and therefore our team will be able to increase output over the duration of the project.

Based on our pilot studies we have identified that the level of effort to produce one hour of Waawaa video (not including overdubbing) can vary significantly. We have developed our scheduling and implementation plan with sufficient buffer and a ramp up timelines to mitigate this scheduling risks.

Implementation Plans – Strategy

These implementation plans have been developed through reliance on the Project Sponsor and Subject Matter Experts. Project Participants shall follow the implementation plan and schedule. The efficacy of the implementation strategy will be reviewed at each Bi-annual Advisory Team meeting. Should significant issues be encountered during implementation, the project participants shall notify the project manager who can call an ad-hoc advisory team meeting to review the plan and make any necessary course corrections.

Gantt Chart

A detailed Gantt Chart outlining each stage of the project, and all project participants and stakeholders, will be revisited and updated throughout the project lifecycle to ensure smooth transitions between project phases. A Gantt Chart is a PM tool that can be used to summarize critical stages of the project, dependencies and anticipated duration of tasks, as well as providing an effective resource for tracking progress throughout the project lifecycle. Gantt Charts show the progression and duration of tasks while also showing dependencies of different events within the project. This schedule will be reviewed with the Project Team before project commencement and regularly reviewed and revised as necessary to avoid schedule slippage, reduce redundancy in effort, and expedite successful project delivery.

Resource Assessment

As part of the Project Management Plan, it is necessary to assess the availability and capacity of resources to ensure they are sufficient to achieve outcomes of the project. Biigtigong Nishnaabeg has been developing our internal resources over several years, which has enabled us to be in a position where we can achieve the goals and outcomes of this proposed project. The resources identified as required to complete this project include:

- Human resources with expertise in areas of language, technology, culture (elders), finances, education
- Technological/material resources
- Capacity building and related initiatives
- Financial resources

Human Resources

Human resource management is key when implementing a project as this dictates the connection between the available workforce and the ability of a project's strategies, objectives and goals to be achieved. The best practice for human resource management can be understood through the following six steps;

1. Develop and Revisit project objectives
2. Assess existing capabilities and capacities
3. Estimate future HR requirements
4. Determine job and resource requirement
5. Implement a Human Resource Management Plan
6. Evaluation and corrective action

This non-linear process will be implemented by our team in completing the project and each phase can be revisited as needed, and at minimum at our Bi-Annual meetings.

The Human Resource Management Plan will be used to provide guidance on how team members will be defined, staffed, managed, and eventually released throughout the project lifecycle. Each member of the team will be assessed based on the following:

- **Role** – function assumed by person on project.
- **Authority** – right to apply resources, make decisions, sign approvals, etc.
- **Responsibility** – duties of work on project team
- **Competency** - skill and capability required to complete assigned activities.

One tool that will be developed is a Responsibility Assignment Matrix (RAM). This method of project management assigns specific actions to each member of the team. Organizing the responsibilities of the team members in a RAM will allow for more organization and can be used to identify a gap in the project team's ability to complete tasks.

Project Roles & Responsibilities

We have secured the necessary human resources for the successful development and implementation of this project. Biigtigong Nishnaabeg has a strong talent pool and exceptional human resources committed to this project. Broadly this includes

- Community leadership (Chief and council)
- Subject Matter experts
 - (in areas of language, culture and STEM)
- Technical staff
- Administrative support (finalizing)

Current key human resources are identified in the table below:

Role	Participant(s)	Responsibilities
Project Sponsor	Chief & Council	<ul style="list-style-type: none"> • Represent community • Provide project oversight and guidance • Review/approve some project elements
Subject Matter Experts	<ul style="list-style-type: none"> • Language consultant • Elders • Industry Partners • Teachers 	<ul style="list-style-type: none"> • Provide language expertise • Provide cultural expertise • Provide Curriculum Expertise
Advisory Committee	Community and Industry Leaders	<ul style="list-style-type: none"> • Approves major funding and resource allocation strategies • Authorizes significant changes • Resolves conflicts and issues • Provides clear direction to the Project Manager • Review project deliverables and milestones • Identify risks and mitigation strategies
Project Manager	Band Administration	<ul style="list-style-type: none"> • Manages project in accordance to the project plan • Coordination with Advisory Committee • Supervises consultants and SMEs • Provide overall project direction • Direct/lead team members toward project objectives • Handles problem resolution • Manages the project budget
Project Participants, incl. technical staff and admin support	<ul style="list-style-type: none"> • Elders • Teachers • Language consultant • Video production team • Others to be identified by SC project Advisory committee 	<ul style="list-style-type: none"> • Communicate project goals, status and progress throughout the project to other participants, and project manager. • Review and approve project deliverables and accountable for milestones • Creates or helps create work products (videos, written materials, curriculum). • Coordinates participation of individuals, teams and stakeholders • Provide knowledge and recommendations • Evaluate outcomes and provide input on key performance indicators • Helps identify and mitigate project risks • Assure quality of products that will meet the project goals and objectives • Achieve milestones on time and on schedule

Other roles and responsibilities are described in relevant sections of this proposal, including Chapter 5 which provides the roles and responsibilities of the governance structure for Biigtigong Nishnaabeg First Nation.

Infrastructure/Material Resources:

The infrastructure required for this initiative includes the eLearning, eAcquisition, and meetup forum functionalities of the Open edX platform. This online platform will be the primary method of delivering language and STEM training to the target audience. Other technologies/software include Code.org, Tynker.com, Lego.com, CompTIA A+ Exam preparation materials and curriculum, etc. Additional information related to technology resources are included in Chapter 4 of this proposal and will be available to the project team as part of the Project Management Plan.

Capacity Building and Related Initiatives

As part of the Project Management Plan, it is important for the project team to have a solid understanding of existing and ongoing initiatives that may influence the Smart Cities project. The project team has identified three (3) existing projects of particular importance to this project, and that should be monitored as part of the project management process. Project leads from each of the below initiatives are already identified as key stakeholders as part of the Smart Cities process and therefore will continue to be consulted over the course of the project implementation, and beyond, as outlined in our engagement plan presented in Chapter 6.

- **Language Project:** ongoing project to capture and preserve the Nishnaabe language and more specifically the Biigtigong dialect.
- **Curriculum Development:** ongoing project to emphasize cultural and land-based learning activities for K-8 students.
- **New School Project** The community has identified continued education, job readiness and skills training and development as a high priority. Biigtigong Nishnaabeg is currently in the process of designing a new elementary school and Business Training and Education Complex. These facilities can be used to promote this program and facilitate participation by youth and young professional. By having this easy access to the target audience this will ensure that the program is adopted.

Financial Resources

This project will rely on the financial resources provided by the community, other participants and Infrastructure Canada, as presented in Chapter 8.

Strategies for: Risk identification and appropriate mitigation

With any given project there is the potential of risk throughout its lifespan. Risks can be any influence which affects the success of a project (i.e. in terms of budget or schedule). Therefore, risk management is an essential process of identifying, analyzing and responding to these influences that may occur, to ensure the project stays on track. Specifically, risk management involves identifying categorizing, prioritizing and planning for risks, with risks being identified as anything that could potentially impact the success of the project (deadlines, quality, or budget etc.). Throughout this project, risk management will be approached as an iterative and proactive process.

The project team will revisit the Risk Management Strategy throughout the course of the project as needed to identify and monitor the potential risks during each phase of the project. Once a Risk Management Strategy has been finalized, deviation from the agreed upon schedule/budget/scope of work will be identified and promptly communicated amongst the project team so that corrective actions can be taken in a timely manner. It is the intent there will be regular project meetings held to monitor the progress made and to identify any potential risks.

The initial Risk Assessment has resulted in the identification of initial project risks, and these are presented throughout our proposal. Key Risks and mitigation strategies are summarized in the table below (Additional risks are identified throughout our proposal):

Risk	Likelihood	Impact	Risk Management Approach/Mitigating Actions
Low Student Participation	Medium	Medium	<ul style="list-style-type: none"> • Program is designed to be interactive and hands on approach • Meaningful outcomes • Onboarding and recruiting strategies • Incentives – i.e. Summer Student Employment • Community celebrations • Good co-op placements • Offer program neighboring First Nation • Develop on-line resources for scalable and replicable
Technology, software and curriculum becomes outdated	Low-High	Medium	<ul style="list-style-type: none"> • Over time (long-term) the chosen technology and curriculum may become outdated. Responsibility of project team (including SMEs) to continuously identify alternatives. • Designed curriculum based on building blocks, so that the principles of STEM curriculum will not change, • Teachers to continue to revisit teaching lessons and curriculum through existing processes.
Nishnaabemwin audio overdub cost is too high	Medium	High	<ul style="list-style-type: none"> • Audio-video editing software & related training • Establish work flow procedures and accountabilities • Set up a review & monitoring system • Establish best-practices • Consider use of a first-speaker as a consultant • Research animation and other technological options • Focus priorities and on core competencies
Extreme high cost of uploading and downloading video	High	High	<ul style="list-style-type: none"> • ISP (PRDC) is providing free on-site services to assist in the offloading, downloading and uploading of video
Expensive video backup system; cloud service unreliable for now	Medium	High	<ul style="list-style-type: none"> • Develop safe and reasonably costed manual backup system • ISP (PRDC) is setting up a free back up system on their servers
Loss of \$100,000 financial contribution from Chief & Council	Low	Medium	<ul style="list-style-type: none"> • Examine projects and make adjustments (cuts) where necessary • Ensure efficiency and effectiveness of projects • Provide and show value for the \$100,000 donation – produce results • Apply for other funding and financial contributions
Change in partners/3 rd party involvement or withdrawal.	Low	High	<ul style="list-style-type: none"> • Build Relationships • Formal agreements • Identify alternative strategies • Continually monitor risk
Admission of new partners.	High	Medium	<ul style="list-style-type: none"> • Admission mechanisms

			<ul style="list-style-type: none"> •Needs based; team approval process •References – due diligence
Conflict of Interest	Low	Medium	<ul style="list-style-type: none"> •Build strong communication •Maximum transparency •Implement Conflict of Interest Policy
Potential inequalities in partners' resources and expertise determine their relative influence in the partnership's decision making.	Medium	Medium	<ul style="list-style-type: none"> •Focus on consensus-based decision making •Address in formal agreements •Build relationships •Access to dispute resolution process •Involve experts on Executive Board
Poorly defined shared vision and objectives.	Low	Medium	<ul style="list-style-type: none"> •Develop shared vision with clearly defined objectives •Link corporate objectives/organizational objectives to the project objectives •Training and Education sessions •Annual and Bi-Annual reviews
performance targets not met in a satisfactory or timely way.	Low	High	<ul style="list-style-type: none"> •Develop an agreed upon Performance Management framework •Conflict management/resolution procedures •Encourage joint ownership of problems & solutions •Relationship building
Failure to engage key stakeholders in meaningful ways.	Low	Medium	<ul style="list-style-type: none"> •Awareness & education of engagement strategy •Communication strategy •Performance measurements inclusion •Evaluation strategy
Failure to comply with relevant laws and regulations.	Low	Low- High	<ul style="list-style-type: none"> •Identification & education of laws & regulations •Dispute resolution process •Develop safeguards throughout project
Partners/3 rd party - Lack of understanding of local culture.	Medium	Medium	<ul style="list-style-type: none"> •Cultural awareness training •Provide explanations – no assumptions •Dispute resolution
Financial risks No strategic approach to issues of risk, costs and benefits	Medium	Medium	<ul style="list-style-type: none"> •Define and agree with approach to dealing with costs and benefits of the •Continuous monitoring & reporting •Utilize Finance Department & Finance Committee
Loss of autonomy	Low	High	<ul style="list-style-type: none"> • Rigorous selection of partners • Clear agreements
Lack of capacity, skills, knowledge and experience	Medium	High	<ul style="list-style-type: none"> • External Recruitment Plan • Local training & development plan • Outsourcing and Contracting Options • Secondments
Insufficient internal & external communication.	Low	Medium	<ul style="list-style-type: none"> • Establish communication plan & review • Regular meetings • Structured reports • Use of collaboration tools

The goal of our risk assessment process is to identify, characterize, prioritize and document a mitigation approach relative to those risks which can be identified prior to the start of the project. The Risk Assessment will be continuously monitored and updated throughout the life of the project and will be communicated with appropriate stakeholder as per our engagement plan, presented in Chapter 6.

Since mitigation approaches must be agreed upon by project leadership (based on the assessed impact of the risk, the project's ability to accept the risk, and the feasibility of mitigating the risk), it is necessary to allocate time during each Advisory Team meeting, dedicated to identifying new risks and discussing mitigation strategies.

Procurement, including alignment with technology and partnership requirements

Our procurement strategy will follow our internal policies and procedures which mandate minimum requirements for service delivery, contract terms, First Nation involvement, etc. For this project the majority of procurement requirements have been established through development of this proposal and are the approach is relatively uncomplex in that they are with preestablished service and software providers, products and partners.

Stakeholder identification, including analysis of impact and influence

A stakeholder refers to any individual, organization or group of people with an interest in the project or the ability to affect its outcome. All stakeholders therefore have a vested interest in the successful outcome of a project. From previous engagement experiences on other projects, we understand the importance of including the diverse groups that will be impacted and/or could impact the project. We understand that this journey, especially the reclamation of our language and aadsookaanan, will potentially stir emotions resulting from historical impacts from cultural genocide. We further understand, that it is necessary to walk through these hurts together in order to move forward, heal and reclaim our culture and identity. This proposal required the input of everyone, as it provided another opportunity to build stronger individuals, families, community and a Nation.

In identifying our stakeholders, we considered those who would be immediately impacted and those impacted according to our 7th generation principle (See Chapter 5). Various target groups have been identified and strategies established to facilitate meaningful engagement. As we move forward from development to implementation, we remain committed to developing effective engagement processes that build upon best-practices while creating new and innovative ways of engagement with the project stakeholders. Furthermore, expectation, assumptions and potential risks for each stakeholder will be identified through this engagement. Having an understanding of what is considered the most important outcome for the project amongst the different stakeholders allows project managers to tailor their approach to align with and meet stakeholders needs. Please refer to Chapters 5 and 6 of the proposal for additional details on our stakeholder management process.

Communication Strategies

Having the support and involvement of all stakeholders will add value to the project, not only through meaningful participation but to also allow for open dialogue and feedback throughout the project. The community engagement strategies completed to date for this project have focused on using our cultural practices to empower youth and community members in a meaningful way.

Throughout the implementation stages of this project a number of these strategies, including community meetings, reporting, surveys, working groups and traditional ceremonies, will be utilized to ensure the continued involvement of the stakeholders at each stage of the project. Most importantly, knowledge sharing and discussions with community members, particularly elders, will be integral to better understanding our traditional Nishnaabe language.

Engagement events (i.e. working groups, community meetings) will be advertised to community members and the general public through the appropriate channels, including but not limited to social media, newsletters and event bulletin boards. A full Engagement Plan for the project can be found in Chapter 6.

Monitoring, controlling, and reporting strategies

Monitor and Control Project Work is the process of tracking, reviewing, and reporting the progress to meet the performance objectives defined in the Project Management Plan. The key benefit of this process is that it allows stakeholders to understand the current state of the project, work completed, budget, schedule, and scope forecasts.

Each member of the project team will be responsible for monitoring the schedule and tasks completed under their supervision. Thus, information sharing and regular communication amongst the project team will be a key component for success.

Should the project team be unable to complete tasks in the allotted timeframe, corrective measures will be implemented immediately, to ensure the project continues without significant delay. Corrective actions may include more frequent project update meetings/conference calls which will allow the project team to collaboratively adjust the internal schedule of the project to ensure all tasks can be completed.

Bi-annual and annual reporting will be conducted and presented to stakeholders throughout the duration of this project, as per the communication and engagement strategy. Bi-Annual reports will coincide with the financial reporting aspect discussed further in Chapter 8.

In terms of reporting to be received from Teachers, reporting to the project team will be completed in the form of summarized and anonymized data, following an agree to template. Reporting to parents and students will follow the exiting process governing their current reporting practices (i.e. report cards).

Approach to sustaining projects beyond the lifecycle of the Challenge

Our project is designed to be implemented over the course of 5 years, with official project initiation beginning September 2019 and implementation ending in August 2024. That being said, significant resources are already in place, and much effort has been expended in developing this

proposal, which will allow us to hit the ground running. Notably, this project does not have an “end” to its lifecycle, instead the project intends to implement the curriculum which can then continue indefinitely. Of course, there will be the need to continuously review, adjust and enhance the approach and curriculum content, especially in terms of STEM education, but the entire idea of this project is to provide long lasting change to our community which can then be replicated and implemented by any community across Canada or the world.

As previously mentioned, our approach to creating a smart city is an onboarding strategy that would provide long lasting effective change to communities, through empowering youth (and others), through cross-generational transfer of cultural knowledge as well as the much-needed STEM knowledge required to ensure active participation in a smart technology driven economy.

Chapter 4: Technology

Introduction

Technology in Biigtigong's on-reserve elementary school and on-reserve high school will help revitalize language and culture, will enhance student learning, will provide students with modern bilingual STEM education, will strengthen students' real-world connections to our Biigtigong territory and to other community members, will improve the efficiency and productivity of teaching staff, and will facilitate communication among students, teaching staff, parents, and elders.

The Vision for Technology

Technology is being utilized firstly as a foundation of our entire proposal – the delivery of the Learning Management System – namely Open edX. Open edX, in turn, then serves as the platform atop which our K-8 students will be acquiring their Nishnaabe language – via 2,000 of immersion video instruction, the content of which is our aadsookaanan (our sacred stories, our philosophical foundations, the basic building blocks of our Nishnaabe worldview). Our aadsookaanan will be reconstructed and written, over the five-year period of this proposal - the aadsookaanan reconstruction process assisted, as well, by technology. Additionally, our students in both elementary school and high school will also have STEM education delivered to them on the Open edX platform in a blended-learning environment (i.e., brick-and-mortar instruction augmented with an online component), by augmenting our current K-12 curriculum with the following:

- For our grades K-5 students, the Computer Science Fundamentals curriculum of Code.org.
- For our grade 6 students, a coding course using the Python programming language.
- For our grades 7 and 8 students, two courses in LEGO Robotics utilizing an expanded, projects-based version of the LEGO MINDSTORMS EV3 Curriculum.
- And, for our high school students, the full curriculum of the CompTIA A+ information technology exam preparation.

Additionally, for our high school students, they will receive, through the medium of our Nishnaabe language, STEM course instruction via 1,000 hours of STEM course videos (available in both the Nishnaabe-language and the English-language.) Professional development will be provided throughout the five-year period for all staff to ensure that culture-based technology is used to transform learning and language acquisition opportunities for all students.

Community informationals will be delivered throughout the five-year period for all community members – especially parents of students – to maintain their informed technology-related decision making.

Plan Duration

The duration of the Plan will be five years (September 2019 through August 2024). The Plan will be reviewed and updated bi-annually. The focus of this technology plan is the curriculum augmentations, community informational, and professional development components.

Stakeholders

The stakeholders to this technology plan include the whole community – including students, teachers, administrators, parents, information technology staff, and elected leaders.

K-12 Curriculum Augmentation

We are building a modern bilingual K-12 STEM curriculum by augmenting our current K-12 curriculum. This chapter will focus on those planned-for K-12 curriculum augmentations.

Technology Plan Vision and K-12 Curriculum Augmentation Rollout by Year

Vision for Technology and K-12 Augmentation

Our vision for technology is the curriculum represented graphically in Chapter 1's Figure 1-1, delivered via the Open edX platform.

Rollout by Year

The yearly rollouts below support the Vision for Technology and K-12 Augmentation. These rollouts begin with an exit goal that states what we expect twelfth grade students graduating from our school to know and be able to do and is followed by yearly rollouts of technology Types 1 and 2 for students and staff who will support learning in our classes and our overall instructional program. These rollouts are intended to guide the implementation of technology across our K-12 curriculum, professional development of teaching staff, educate the community on the relevant technologies, deliver bilingual K-12 STEM knowledge, and support the reconstruction and revitalization of our Nishnaabe language and aadsookaanan (sacred stories).

Exit Goal: Students graduating from Biigtigong's high school (whom have also graduated from Biigtigong's elementary school) will be able to code in an introductory text-based programming language (Python), will be able to assemble and control robots using a text-based programming language (ROBOTC, a language similar in structure to the C programming language), will have successfully completed the exam preparation curriculum for both parts of the CompTIA A+ exam (exam #220-1001, and exam #220-1002), will be able to nearly-completely understand their Nishnaabe language, and will know all of their core aadsookaanan.

Yearly Rollouts of Type 1 Technology:

Year 1 (Sep. 2019 – Aug. 2020)

- We begin using Appsembler, our chosen SaaS-provider of the Open edX platform, to deliver our augmented K-12 curriculum.

Years 2 through 5 (Sep. 2020 – Aug. 2024)

- We continue using Appsembler, our chosen SaaS-provider of the Open edX platform, to deliver our augmented K-12 curriculum.

Yearly Rollouts of Type 2 Technologies:

Type 2: Technologies utilized in our K-12 curriculum

For the rollout schedules of the technologies utilized in our K-12 curriculum, please see Appendix B and Appendix C for each of the five years of this proposal.

Detailed curriculum documents can be found here:

- Code.org – Computer Science Fundamentals curriculum:
https://code.org/curriculum/docs/csf/CSF_Curriculum_Guide_2018_smaller.pdf
- Python 1 – Tynker.com's 'Python 101' course curriculum:
<https://www.tynker.com/school/coding-curriculum/scope-sequence>

- Robotics 1 and 2 curriculum – LEGO MINDSTORMS EV3 curriculum:
<https://education.lego.com/en-us/downloads/mindstorms-ev3/curriculum>
- CompTIA A+ exam preparation curriculum:
 - Exam #220-1001: <https://www.certblaster.com/wp-content/uploads/2018/07/A-plus-220-1001-pdf-Exam-Objectives.pdf>
 - Exam #220-1002: <https://www.certblaster.com/wp-content/uploads/2018/07/A-plus-220-1002-pdf-Exam-Objectives-1.pdf>

Type 2: Technologies utilized in the reconstruction and writing of our core aadsookaanan

In the interest of effective use of space here in this proposal, these technologies will be utilized on an as-needed basis to write our aadsookaanan. These technologies will be utilized throughout all five years of the the five-year period.

Type 2: Technologies utilized in the production and provision of our three types of video

In the interest of effective use of space here in this proposal, these technologies will be utilized on an as-needed basis to record, overdub, animate, and edit our video. These technologies will be utilized throughout all five years of the the five-year period.

Yearly Rollouts of Professional Development and Community Education:

Year 1 (Sep. 2019 – Aug. 2020)

- We begin delivering technology-related professional development to K-12 staff.
- We begin delivering technology-related informationals to community members – especially to parents of students.

Years 2 through 5 (Sep. 2020 – Aug. 2024)

- We continue delivering technology-related professional development to K-12 staff.
- We continue delivering technology-related informationals to community members – especially to parents of students.

Details about the Technologies

In addition to our existing technology, there are two main types of technology needed to implement our proposal. The first type comprises the constituent technologies of our Learning Management System (LMS), Open edX. Broadly speaking, Open edX is *the* technology which houses the entire blended-learning experience which we're planning to deliver with our proposal. The second category comprises all other technologies which enable that experience to occur. This second category includes the technologies utilized in our augmented K-12 curriculum; the technologies used in the reconstruction and the writing of our core aadsookaanan; and the technologies employed in the production and provision of our three types of video: Waawaa immersion video, Nishnaabe-language immersion video, and bilingual (Nishnaabe-language and English-language) STEM video.

Current Technologies

Current Hardware

Apple iPads (<i>Student Usage</i>)	60
Apple iPads (<i>Teacher Usage</i>)	5
Apple MacBook Pro laptops (<i>Student Usage</i>)	34
Apple MacBook Pro laptops (<i>Teacher Usage</i>)	10
Windows desktop PCs (<i>Student Usage</i>)	22
Windows desktop PCs (<i>Teacher Usage</i>)	4
Apple iMac desktop computers (<i>Teacher Usage</i>)	1
Promethean ActivBoard Touches	6
Digital SLR Cameras	2
Digital Cameras/Recording Devices	2

Current Software

Video Editing	Windows Movie Maker, iMovie, Adobe Premiere Pro
Photo Editing	Adobe Photoshop
Office Productivity	For Windows: - Word, PowerPoint, Excel, Publisher, OneNote, Outlook For macOS: - Pages, Keynote, Numbers, Notes

Type 1 Required Technologies

Technologies utilized to deliver our Learning Management System (LMS)

- Open edX platform (open source - GNU Affero General Public License)
 - Open edX iOS mobile app (open source - Apache License)
 - Open edX Android mobile app (open source - Apache License)
 - Written in Python (open source - Python Software Foundation License (PSFL) [a BSD-style, permissive free software license which is compatible with the GNU General Public License (GPL)].)
 - Built on Django (open source - Django's BSD license)
 - Utilizes PostgreSQL relational database (open source - PostgreSQL License [a liberal Open Source license, similar to the BSD or MIT licenses])
- Khan Academy API (free proprietary)
- Appsembler (proprietary SaaS-provider of Open edX)
- Customizations by Biigtigong Nishnaabeg to Open edX platform (open source - GNU Affero General Public License)

Type 2 Required Technologies

Technologies utilized in our K-12 curriculum

- Code.org (open source - Apache License)
- Khan Academy (free proprietary)
- Python - (open source - Python Software Foundation License (PSFL) [a BSD-style, permissive free software license which is compatible with the GNU General Public License (GPL)].)
- LEGO MINDSTORMS EV3 Software (free proprietary)
- LEGO MINDSTORMS EV3 Robot Kit (proprietary)

Technologies utilized in the reconstruction and writing of our core aadsookaanan

- LibreOffice desktop office productivity software (open source - Mozilla Public License Version 2.0)
- ONLYOFFICE desktop office productivity software (open source - AGPLv3)
- MariaDB relational database (open source - GNU GPL v2.0)
- HeidiSQL free and open source administration tool for the MariaDB relational database (open source - GNU GPL v2.0)

Technologies utilized in the production and provision of our three types of video

- Storywriting and screenwriting software (Mariner Persona, Write Brothers Dramatica Pro, Movie Magic Screenwriter)
- Storyboard software (Moviestorm Filmmaker, Power Production's Storyboard Artist Studio, Storymind StoryWeaver)
- Office productivity software (LibreOffice, ONLY OFFICE)
- Digital Pen (Epic Pen)
- Drawing Tablet (Wacom drawing tablet)
- Mocap-capable 2D animation software (Adobe Creative Cloud - Character Animator)
- Webcam (to interface with mocap-enabled 2D-animation software)
- Microphone and accessories (for recording audio with which to overdub the video)
- Riggable 2D-character creation (Adobe Creative Cloud - Illustrator, and Photoshop)
- 3D modelling software (for the creation of assets for the animatics in the 2D-space 'digital flip chart' immersion instruction by the 2D-animated character) (Sketchup Pro)
- Screen recording software (TechSmith Camtasia)
- Video-editing software (Adobe Creative Cloud - Premiere Pro)
- Audio-editing software (Adobe Creative Cloud - Audition)
- SFTP (Secure File Transfer Protocol) client (WinSCP)
- SSH (Secure Shell) and Telnet client (PuTTY)
- Video player software (VLC Player)

Relevant Applications Elsewhere

These technologies are applicable and useful in governance (especially for effectively engaging community member in all facets of community life), new council member initiation, training of new staff, ongoing professional development of current staff, general community informationals, and bringing the entire organization online.

Results of Testing and/or Piloting in the Finalist Phase

We achieved fun and excellent results throughout the finalist phase in all of our pilot projects. Our biggest challenge, as we mentioned in Toronto at our November Jury Check-In, was easing the fears of the teachers and inspiring them with hope for new possibilities concerning their lack of technical expertise in the areas of Technology and Engineering. Coding, in particular, seems to have unnerved the staff of our elementary school the most. Our Elementary School's professional development sessions with the teaching staff, their testing and piloting of the technologies in the classroom and the community, including actual blended-learning classroom sessions using Khan Academy and Code.org, building and controlling Lego robots, and employing block-based programming to control circuit boards using Scratch and Makey Makey, transformed these moments of doubt into empowering moments of possibilities (in our teaching staff's own words!).

Approach to Future-Proofing the Technologies

Firstly, most all of our software applications which are not open source have 'safety-net' open source equivalents. This is how we're safeguarding against vendor-generated proprietary constraints and obsolescence while simultaneously enabling transferability and scalability. Our few proprietary choices here allow us to go faster and thus be more efficient and effective with our time due to the fact that we have personnel with considerable experience in the proprietary versions of these software applications. Should, however, any of the vendors of these proprietary software applications which we're using do something which disallows us to continue effectively using their software, we can quickly and near-frictionlessly switch over to the respective open source equivalent software application with little to no interruption in our workflow.

Secondly, while we are certainly onboarding youth into the smart cities future. We're *also* onboarding K-12 teachers and staff, as well as community members in general. The continuing professional development of teaching staff, and the ongoing informing of the community will produce for us a workforce that is able to implement and operate the technologies and systems going forward into the smart future.

Adoption of Architectures, Guidelines, and Initiatives

Had we chosen to install Open edX's software on servers other than Appsembler's, we would have indeed had an architecture adoption challenge to contend with. Because we are attempting to make this proposal's approach to moving into the smart future as newbie-friendly as possible, we have chosen to simply use Appsembler as our SaaS (Software as a Service) provider of the Open edX platform. The architecture issue thus goes away as we have only a web-based interface to Appsembler to contend with. A very newbie-friendly approach, indeed.

The guidelines that concern us here are the blended-learning guidelines. We are not advocating for an 'online' school. What we are advocating is enhancing brick-and-mortar curriculum delivery with some online options. The guidelines for attaining this hybrid approach is what we are referring to when we use the term 'blended-learning.'

Similarly, the initiative which concerns us here is the Growth Mindset as implemented by Khan Academy. The Growth Mindset can be many things to people. For us, we once again, take a newbie-friendly approach. The Growth Mindset in its minimalist form is not allowing students to progress in their curriculum studies without first mastering the content in their current stage of learning. For example, a student receiving an 85% in a math quiz, for example, is made to redo the quiz until that student receives a perfect score. This is a fundamental approach of Khan Academy, and one which we wish to emulate

on our online quizzes using randomized tests with a large database of possible questions for our students. These randomized tests are what we are referring to in our Type 1 Required Technologies section by Customizations by Biigtigong Nishnaabeg to Open edX platform. These are simple JavaScript scripts placed on the front-end webpages of our students quiz pages on Open edX that create a Khan Academy-like testing experience, rendering it what we are referring to as a Growth Mindset Approach to learning.

Interoperability

- Open edX with Appsembler's API (Application Programming Interface) make the platform interoperable with any other technology one could reasonably choose to interface with.
- Using Khan Academy's API (Application Programming Interface) for Khan Academy courses which we'll be offering inside of Open edX makes this customized aspect of Open edX interoperable with nearly any other technology.
- Existing community systems and services are currently not networked. Open edX will be the platform with which Biigtigong Nishnaabeg begins to connect these community systems and services.

Replicability and Scalability

Because we have chosen a foundational platform which is fully open source (Open edX), which we're augmenting with curriculum components (e.g., code.org) and learning-facilitation aids (e.g., Khan Academy) which, too, are nearly all open source and free of charge, our proposal - nearly in its entirety - is replicable in any community one might wish to bring it to.

As we've stated earlier, in the cases where we have chosen to use a proprietary technology – for example, LEGO, which does not operate in the open source ecosystem – we have been careful to make sure that there are near-equivalent open source options - in this case, Raspberry Pi, which does operate in the open source ecosystem – for that technology.

Additionally, as we state several times throughout our proposal, we are offering an onboarding approach to communities that may not have access to bleeding-edge technology, nor perhaps to bleeding-edge technology's administering engineers, programmers, or operators. It is our hope that by keeping the technology requirements of our proposal to a minimum, making our approach as replicable and scalable as is reasonably possible, and still delivering a smart technology approach, we can thereby help facilitate the spread, and long-term acceptance and flourishing of, smart cities throughout Canada.

Roles and Responsibilities of Technology Partners

Technology partners:

- Software and hardware partners
 - Roles and responsibilities are clearly delineated and articulated in the software licensing agreements of each of the technologies.
- Pic River Development Corporation (PRDC) - *Internet Service Provider (ISP)*
 - Most importantly, PRDC's role is to provide for our Waawaa immersion video producers a place in which to offload their video each week. Without this important role being played by this ISP partner, our video producers are forced to use Dropbox or something similar to upload their video instead of being able to simply offload it. This is not an ideal option as piloted upload times during the finalist phase had been exorbitantly and prohibitively high. Offloading all of their video each week onto the servers at PRDC's office is an extremely time-efficient way to get their video to our Nishnaabe-language overdubber.

Technology Accessibility and Usability for Uptake and Acceptance

Community informationals, especially for students and parents of students, will facilitate the community's uptake of Type 1 and Type 2 technologies.

Identification of Risks

Technology – Risks and Mitigation Strategies			
Risk	Likelihood	Impact	Mitigation Strategy
Limitations as a result of internet connections.	Medium	High	<ul style="list-style-type: none"> • Selective over software – set standards & assessment • Minimize use of cloud computing
Video uploading and downloading time is lengthy and irregular.	High	High	<ul style="list-style-type: none"> • Agreement with the ISP (PRDC) • PRDC to provider server space for video storage • PRDC will upload video to their servers
Lose control over data	Medium	High	<ul style="list-style-type: none"> • Establish local control policy & provider/partnership assessment process • Thorough planning over data collection & data management • Formal agreements for control • Establish monitoring system
Resistance from all levels – students, parents, staff	Medium	Medium	<ul style="list-style-type: none"> • Conduct education sessions • Professional development • Good communication systems • Regular reporting • Set up support systems • Provide performance summaries
Risks related to the increased access to sensitive information	Medium	High	<ul style="list-style-type: none"> • Secure computers, servers and wireless networks • Use anti-virus and anti-spyware protection, and firewalls • Regularly update software to the latest versions • Use data backups that include off-site or remote storage • Secure your passwords • Train staff in IT policies and procedures
Cyber-threats including malware	Low	High	<ul style="list-style-type: none"> • Security software, user training, and policies and procedures in order to safeguard our systems, networks, and information.
Commercial software providers are now integrating their products with social media sites, making risk mitigation very difficult.	Medium	Medium	<ul style="list-style-type: none"> • Try to avoid providers who integrate their products with social media. • Formal agreements to address issue
Failed Internal Processes – the failure of internal processes to perform as needed or expected. This comes from poor process design or execution, or faulty process controls.	Low	Medium	<ul style="list-style-type: none"> • Technology development team to develop processes • Stringent review process and reporting • Communication of internal processes • Education
Lack of technical competence	High	Medium	<ul style="list-style-type: none"> • Recruiting plans

			<ul style="list-style-type: none"> • Internal building of capacity – short and long term • Use of experts • Outsourcing
Financial Costs too high	Medium	Medium	<ul style="list-style-type: none"> • Good planning and cost estimates • Budget reviews • Alternative revenue sources • Internal program reviews – looking for efficiencies

Chapter 5: Governance

Introduction

Biigtigong Nishnaabeg have always governed ourselves in accordance with our traditional laws, customs, language, traditions, values, processes and structures. Over the years these have changed, mostly as a direct result of the impacts of colonization, where systems in direct contradiction of our cultural ways were imposed upon us. In response to centuries of culture and language loss and disconnection from our social and philosophical systems, we are committed to rebuild our contemporary governance systems that reflect our Nishnaabe culture.

Culture lies at the heart of governance. It forms the foundation and fosters the collectivism of a people through a shared sense of values, beliefs, meaning, knowledge systems, rules, purpose and vision. Through this shared culture, acquired over generations of our people, we are connected beyond the confines of our organization and the projects we create and implement. Our organization and project governance systems are an extension of and reflection of our Nishnaabe way of existing as individuals and as a collective.

The governance plan set out herein seeks to align cultural our Nishnaabe cultural practices and beliefs with modern practices, to facilitate a process that supports the implementation of the project and increases the success of achieving our outcomes. The governance structure has been established under the authority of Chief and Council. The structure was carefully designed to ensure it effectively facilitates the successful implementation of the proposal and the attained of the respective outcomes. It is based on Biigtigong's best practices and in alignment of its long-term vision in respect to governance.

According to the Project Management Institute (PMI), project governance is the elements and strategies that make a project successful. It is based upon the tailored needs of the community. The governance framework and strategies for this project are tailored to the community, rigorous, transparent, and will deliver value for money. The project team will ensure that the governance framework is implemented throughout the project and adjusted if deemed necessary.

Our Governance Structure

Biigtigong Community:

We are ultimately responsible to the members and residents of Biigtigong Nishnaabeg, including our ancestors and the seven generations to come. The people are the foundation of our governance structures. We are building upon a strong sense of community and a commitment to the vision for our children. Our governance structures and engagement strategies facilitates and builds strong connections with our community. Our Smart Cities Governance Plan makes community involvement and engagement a priority. We will create new opportunities for their involvement and build upon the existing systems. We ensure structures are in place to include our community throughout the lifecycles of projects and our long-term strategies. We are accountable to our members and their involvement is critical to ensuring we achieve our outcomes.

Chief and Council:

As the formal elected leadership of Biigtigong, this governing body is ultimately responsible for the overall affairs of the First Nation. Council has established governance systems that provide the necessary support and parameters for effective project governance systems. Our political and administrative functions are clearly defined and separated. Elected leadership is responsible for strategy and providing

the systems, laws, policies, and other resources, to support successful implementation of projects. The governance model adopted for the Smart Cities project follows, aligns and enhances Biigtigong's Governance systems.

The Chief and Council through the authority of Biigtigong's Constitution will establish an Executive Board to oversee the Smart Cities Proposal. Additionally, two committees will be set up to support the proposal and the attainment of the outcomes. Both committees will play an integral role in achieving our outcomes and in creating high levels of accountability and involvement of our community. The following provides a brief overview of these three entities.

SC Executive Board

This board has been mandated as the governing body to oversee the implementation of our Smart Cities proposal. They will provide strategic direction to ensure the proposal continuously meets the needs of the community and achieves the identified outcomes. The Board will deliberate, make decisions, advise, provide strategic oversight, and to serve as the primary "advocate" for all the Smart Cities initiatives.

The Board is also responsible for the key business issues associated with the project. This includes approving the budgetary strategy, monitoring risks, quality and timelines, making policy, defining outcomes and deliverables, assessing change requests.

The Board will oversee the activities of the Aadsookaanan Reconstruction Committee and the Clan Engagement Committee. Both Committees were established to mitigate potential risks and create new opportunities. The Board will supervise and work the Smart Cities Project Lead throughout the project.

The Board reports directly to the Chief and Council and is subject to the regulations set out in the Terms of Reference for the Board and the Regulations Governing Committees. The Board and Council will collectively innovate on improving the reporting systems, promoting transparency, accountability and stakeholder engagement.

Due to the strategic importance of the proposal to the future of the community, the Chief will sit as the representative of the elected leadership. The Board will also be comprised of our CEO, Education Director and two youth. To increase success and mitigate risks, our Board will also include experts from the following fields: Nishnaabemwin (Language), Science, Technology, Engineering and Mathematics. We have five experts who have committed to sit on this Board.

Aadsookaanan Reconstruction Committee

This Committee will be part of the governance arm and will report directly to the SC Executive Board. Comprised of elders, traditional knowledge holders, and language carriers, youth and parents, this team will be responsible to assist in the reconstruction of our sacred stories, our Aadsookaanan.

Their primary role will be to provide guidance and direction to the technical and research group. They will have decision-making authority to approve the core aadsookaanan and forward the stories to the Immersion Team for video production. The Committee will also assist in mitigating risks that exist or may come to be. The primary risk management strategy includes engaging with the community and providing information and education.

The Committee will operate according to its Terms of Reference and Biigtigong's Regulations Governing Committees. Following our cultural protocols governing elders and the transfer of knowledge is foundational to our governance plan.

Clan Engagement Committee

Engagement with all of our stakeholders is a critical factor to achieving our outcomes. In order to achieve high levels of meaningful engagement, we will employ our traditional clan system for this purpose. Each clan will select 2 representatives to sit on the Clan Engagement Committee. Clan leaders are responsible to report directly back to their respective clans, following the protocols established by the clans. Clan leaders hold the responsibility for two-way communication and reporting. This system allows for diverse engagement and facilitates deeper discussions and collaboration.

Inside the structure of the clan system are protocols that speak to the roles and responsibilities of individuals and the clans. Accountability, disclosure and transparency are inherent to the system. It also addresses ethics, communication, and codes of behavior, decision-making methods and dispute resolution. From an organizational perspective, the Clan Engagement Committee will report directly to and work closely with the SC Executive Board. The team will operate according its Terms of Reference and Biigtigong's Regulations Governing Committees.

Linkages with Existing Committees:

We will utilize existing governance structures to support the implementation of our proposal.

Youth Council

Our governance model will facilitate linkages between the SC Executive Board and our Youth Council, via the Board's two youth representatives. The Youth Council is an existing Committee that represents the interests of the youth and facilitates their involvement in the growth and development of their community. We will utilize this relationship to improve our connections with our youth and ensure we are meeting their needs.

Education Committee

The Education Committee is mandated as an advisory function in support of the Education Department. It is a primary means for parental involvement in education. We will utilize these resources, via the Education Director, to support the proposal's implementation, specifically within the Education Department. This provides another link to the stakeholders and ensures alignment with the Education strategy.

Finance and Audit Committee

The Finance and Audit Committee is responsible to review and make recommendations to Council on the financial administration matters of the Nation. The Finance and Audit Committee assists Council in fulfilling its oversight responsibilities for the financial reporting process, the system of Internal Control, the audit process, and the process for monitoring compliance with laws and regulations and the code of conduct.

The Executive Board will comply with the initiatives of the Finance and Audit Committee and the Director of Finance to ensure financial accountability and transparency. Biigtigong's Financial and Administrative Policies and Procedures govern the financial and human resource management of the project.

Project Implementation Governance Systems

Some of the Smart Cities projects fall under the mandate of existing Departments. These projects shall become the responsibility of various Departments, such as, Education and will be administered in accordance with the existing governance and management systems of the First Nation. There are institutionalized and established systems that define roles and responsibilities, personnel matters, finance, performance management and evaluation, dispute resolution, risk management, reporting responsibilities, lines of authority and lines of command.

Senior Management Team

Inside of this system is an established Senior Management Team comprised of all Department and Service Directors. This body acts as the central coordinating entity for the First Nation that facilitates a holistic approach. A member of this team will be appointed to the SC Executive Board to ensure continuity, alignment and accountability. This individual will also act as a liaison between the Senior Management Team and the Smart Cities Executive Board. Respective Directors will obtain direction and provide input via this process and take the necessary steps for implementation within their departments.

Education Department

Our Education Department will be responsible for the implementation of the core components of our proposal, including the K-12 STEM program, Nishnaabemwin Immersion and the Meet-Up App. An organization review was conducted to determine the requirements for the integration of the new programs. Governance systems that define staffing requirements, organizational and reporting structures, roles and responsibilities, performance management, training and development, risk mitigation strategies, and financial requirements for the Smart Cities implementation are established. The education staff was involved throughout the entire review and development phase.

The implementation of the education components of the proposal will be under the direction and supervision of the Education Director. The Director will report on the activities and status of the projects to the Executive Board and the Project Lead. The reporting structure is designed to be flexible to allow for adaptive approaches to respond to changing needs. The Education Director will also provide updates and facilitate necessary action and support with the Senior Management Team.

Economic Development Department

This Department will be responsible for the implementation and management of our Youth-owned Student IT Business, the co-op placements and summer employment. Our team will work collectively with this department to create an innovative pathway for our high school students, providing an academic foundation supported by real-world work experiences. Our economic development department will build relationships with STEM based industries to assist in the co-op placements and summer employment. Our co-op program will be governed by the Ontario Ministry of Education standards and our own internal policies. Special considerations for individuals enrolled in the CompTIA A+ program will be built into our Summer Student Employment Policy, to support their path throughout high school.

Smart Cities Inter-departmental Program Committee

As part of our governance structure we will create an inter-departmental program committee, comprised of front line staff that are directly responsible to deliver specific programs. This team will consist of the SC Project Coordinator, Immersion Lead, STEM Lead, Co-op Lead, Meet-up App Lead and the Economic Development Manager. This group will work to strengthen collaboration across the team and integration of projects. They will review activity reports, monitor progress and outcomes, discuss administrative concerns, identify training needs, coordinate project management, identify risks and

solutions and create substantial working relationships. The Committee will report to the Education Director. The Education Direction will bring all appropriate matters to the attention of the Senior Management Team and/or Executive Board.

Governance Principles

We will utilize our traditional governance principles, as set out in our Aadsookaanan, as embedded in our language and ceremonies, as practiced within our operations and commit to gaining a greater understanding of our traditional ways and establishing more effective and legitimate governance systems. Our principles support processes that are consensus oriented, participatory and inclusive, transparent, accountable, long-term considerations, responsive to change, flat and non-hierarchical, and based on relationships. We will adhere to the governance principles identified in Biigtigong's Constitution, laws, policies, procedures, informal protocols and cultural practices.

Decision-making

Our cultural practices utilize a consensus-based decision-making model. As an approach to fostering collaboration, consensus-based decision-making provides every individual equal access and responsibility to the process. This model facilitates improved decisions due to the stakeholders claiming responsibility by providing input in keeping with the best interests of the seven generations to come. It fosters increased interpersonal connections and relationships, resulting in greater sense of cohesion and commitment to the goals and vision. Utilizing our cultural practices and embedding our values inside of our governance system enhances the project and its successful implementation.

Part of our decision-making model includes mechanisms to deal with conflicts and disputes. We utilize a restorative justice model as our dispute resolution process. Based on cultural values our systems aim to restore harmony, balance and build relationships. We will utilize Biigtigong's processes to address potential conflicts with or amongst our stakeholders.

Human Resource Management

Human Resource management is coordinated by Biigtigong's Finance and Administration Department. Policies and procedures are in place to govern hiring and recruiting, training and development, travel, honoraria, salary, compensation, performance appraisals, employee benefits, health and safety, contracts, confidentiality, code of ethics, conflict of interest, dispute resolution, employee relations and well-being. This centralized system promotes fairness, consistency, transparency and accountability. All staffing and awarding of contracts associated with the Smart Cities proposal will be subject to the existing policies of the First Nation.

Change Management

Our culture acknowledges the world is in constant flux and change; we are in a perpetual state of responding to this change. The concepts of renewal and transformation are inherent to how we interact with the inter-connected world. These beliefs are reflected in our governance systems. We adopt a learning environment that fosters change and utilize iterative management practices to ensure on-going alignment between our outcomes and the needs of our stakeholders. We offer employee assistance programs to assist in change management. Additionally, our Social Services Team provides supports to assist individuals, families and teams, with any issues that arise as a result of change. We also rely on our cultural ceremonial practices to assist in our change management efforts.

Risk Management

Our goal is to create an organization culture where risk identification and management become part of everyday life. Although it is important to conduct a risk assessment at the onset of a project, it is equally

important to ensure risk management activities are performed, recorded and monitored throughout the lifecycle of the project. Our risk management strategies aim to accomplish this.

For this project, we will utilize a framework that provides for a process for risk identification, risk analysis, risk response planning, monitoring, controlling and reporting. For each major risk that is to be mitigated or that is accepted, a course of action will be outlined for the event that the risk does materialize in order to minimize its impact. Monitoring and reporting mechanisms will be built into all levels of governance and project implementation. Ultimately, the risk management plan is the responsibility of the Executive Board.

Communication Plan

Communication is the key to a successful project. Our communication plan identifies key stakeholder and avenue for the delivery of pertinent information. Information will be delivered to all stakeholders in a timely fashion. Our engagement plan provides more details on how we plan to build strong communication with our stakeholders.

Control Process

The project team will continuously monitor the project against established timeline and metrics. This will ensure that the project is in accordance with budget and timeline and that deviations are remedied. Our internal systems of control are well defined and tested. We have made some adjustments to ensure our Smart Cities implementation is done so successfully.

Partnerships

Introduction

The goals of our Smart Cities proposal are ambitious and require a collaborative approach to make them achievable. Partnership opportunities exist across many sectors and include individuals, businesses, education institutions, governments and community organizations. Partnerships are a strategic process and our approach to partnerships begins at home by creating a solid foundation that we can build upon. We want Smart Cities to live beyond the life of the proposal and become part of how Biigtigong exists.

Our Internal Partnerships

The impacts of our proposal outcomes will create substantial change that extends past the individual students and into the social and economic fabric of the community. Preparing our children for the digital world also includes preparing our organizations and community. This is why our membership is best served by aligning our different departments and related organizations. These alliances require deep interpersonal connections and appropriate structures and systems in order to yield the highest benefits.

Our internal partnerships are living systems that evolve progressively in response to the changing environment and the needs of our membership. Building upon and utilizing our internal resources and developing our capacity are necessary to achieve long-term sustainability. Collaboration between our service departments and community owned organizations are critical to achieving success.

Our focus, the central point of everything, is our children and this is what brings us together and keeps us together. The elders always remind us that it is our responsibility to keep our children in the center of everything. Sharing a common vision and purpose is what binds successful partnerships. Our Smart Cities proposal is attached to and supports Biigtigong's bigger vision of Nation building.

Biigtigong's Service Departments

Our Smart Cities proposal development team, which consisted of two members of the Senior Management Team and the Chief, approached the proposal implementation phase as a collective effort of our entire team. The goals of the proposal align with the overall goals of the organization, making it easy to establish collaboration and project partnerships. We entered into collaboration agreements with our service departments. The purpose of these agreements is to demonstrate that the proposal is supported by the entire organization.

Our internal partnerships are governed by the structures, regulations, practices and historical relationships that exist within the organization. We have established and proven frameworks that we utilize for our projects. These frameworks address general project management requirements, such as, managing risks, finances and resources, quality assurance and performance management, human resource and capacity development, reporting and accountability and team development. Our implementation plan is build upon our assessment of our internal capacities, readiness and resources.

To ensure success, our implementation plan allocates specific tasks to respective departments who have a related mandate. For example, our Sustainable Development Department who is responsible for economic development, employment and training, will be responsible for the establishment of the high school reBOOT IT business, co-op placements and summer employment. While our education department will be responsible for the academic portions of the co-op high school program. Such partnerships allow us to extend the reach of our project goals and build the foundations for long-term sustainability.

The community retains control over sensitive and personal data. We already have established policies and systems that manage and control data collection. We do not want to re-invent systems but rather utilize existing resources and help make necessary improvements where we can.

The initial commitments from our service departments are identified in the collaboration agreements attached. These will be continuously reviewed, monitored and developed to ensure the best possible strategies are collectively implemented to better serve our membership. Our Smart Cities proposal has provided another rallying point to collectively strategize in bringing together our efforts to innovate and make meaningful lasting change and improvements.

Our External Partnerships

Two of our main external partnerships are with independent, but related entities of Biigtigong. Pic River Development Corporation is the Internet Service Provider in the community and will provide services for the off-ramping, uploading, downloading and backup storage of our videos at no cost. They also made a financial commitment to support the project implementation. Anishinabek Employment and Training Services is an entity that provides employment support and training services on behalf of 9 First Nations. A three-year financial contribution has been made to assist in the development of the CompTIA A+ and reBOOT co-op education program and the summer student employment portion. Biigtigong has existing agreements with both entities that defines the relationship, mandate, governance structures and other areas. The risks associated with these partnerships are extremely low and mitigation strategies to address the risks are already in place.

Biigtigong has many business partners and professional relationships. Part of our business strategy is to develop mutually beneficial partnerships that create value. We seek to be a 'partner of choice' and have a history of successful partnerships. Letters of support from some of our business partners are attached to this proposal. We have not entered into any formal partnership agreements but we will explore the

options when needed. At which time we will enter into formal agreements that define the details of the partnership.

Our Service Partnerships

Our Smart Cities team has enlisted the help of two organizations who bring value to achieving our set outcomes. Memorandums of Understanding have been signed with ICTC and reBOOT Canada and provide the details of the partnership. Both entities are assisting us with the implementation of our K-12 STEM programs. Our projects share common visions and provide services that complement each other and provide a good fit. We have developed excellent working relationships and have created a common path and are equally excited to embark on our journey together.

Anishinabek Education System

23 First Nations are part of an education self-government agreement with Canada and Ontario, forming the Anishinabek Education System. The participating First Nations under the Anishinabek Education System will enact education laws that govern the Anishinabek Education System and the delivery of programs and services. Each participating First Nation has law-making power and authority over education from JK to Grade 12 on reserve. Participating First Nations will also establish and maintain system-wide education standards that support the transfer of Anishinabek students between the Anishinabek Education System schools and the provincial education system schools.

AES is in its development stage and in the process of getting established and operational. The Board has provided a letter of support of our proposal and we will explore options on how our proposal implementation can assist the other 22 First Nations. AES is an opportunity for First Nations to collectively work together to address the education needs of our children. We expect that as AES develops that we will create innovative approaches to improving the lives of our children.

Summary of Partnership Agreements

Source	Type	Notes
Internal Collaborative Partnerships		
Children & Family Learning Centre	Collaborative Service Agreement	Biigtigong Service Department
Health & Social Services	Collaborative Service Agreement	Biigtigong Service Department
Sustainable Development	Collaborative Service Agreement	Biigtigong Service Department
Capital-Housing	Collaborative Service Agreement	Biigtigong Service Department
Finance & Administration	Collaborative Service Agreement	Biigtigong Service Department
Education	Collaborative Service Agreement	Biigtigong Service Department
Service Partnership Agreements		
Pic River Development Corporation	Memorandum of Understanding	Biigtigong Non-Profit Corporation
reBOOT Canada	Memorandum of Understanding	New Partner
Information And Communications Technology Council (ICTC)	Letter of Support Memorandum of Understanding (waiting on approval)	New Partner
Anishinabek Employment and Training Services (serves 9 First Nations)	Letter of Support – financial commitment	Aboriginal Skills Employment and Training Strategy
Industry Support		
S. Burnett & Associates	Letter of Support	Business Relationship/Partner
Anishinabek Education Services (23 First Nations)	Letter of support	Anishinabek Nation Education self-government agreement
Nishnawbe-Aski Development Fund (NADF)	Letter of Support	Business Relationship/Partner
AV Terrace Bay Woodlands	Letter of Support	Business Relationship/Partner
Barrick Hemlo	Letter of Support	Business Relationship/Partner
BDO	Letter of Support	Business Relationship/Partner

CRC Communications	Letter of Support	Business Relationship/Partner
First General Services	Letter of Support	Business Relationship/Partner
Supercom Industries	Letter of Support	Business Relationship/Partner
Chant	Letter of Support	Business Relationship/Partner
Biigtigong Dbenjgan	Letter of Support	Business Relationship/Partner
BMC Contracting	Letter of Support	Business Relationship/Partner
BMO Bank of Montreal	Letter of Support	Business Relationship/Partner
DJB Consulting	Letter of Support	Business Relationship/Partner
FP Innovations	Letter of Support	Business Relationship/Partner
GMS Camps & Catering	Letter of Support	Business Relationship/Partner
Hydro One Networks Inc.	Letter of Support	Business Relationship/Partner
Mkwa Timber GP	Letter of Support	Business Relationship/Partner
Ontario Waterpower Association	Letter of Support	Business Relationship/Partner
Royal Bank of Canada	Letter of Support	Business Relationship/Partner
TBT Engineering	Letter of Support	Business Relationship/Partner
** Evidence and details of partnerships are included in the Appendices.		

Governance & Partnership Risks and Mitigation Strategies

Risk	Likelihood	Impact	Risk Management Approach/Mitigating Actions
Change in partners' involvement or withdrawal.	Low	High	<ul style="list-style-type: none"> • Build Relationships • Formal agreements • Identify alternative strategies • Continually monitor risk
Admission of new partners.	High	Medium	<ul style="list-style-type: none"> • Admission mechanisms • Needs based; team approval process • References – due diligence
Conflict of Interest	Low	Medium	<ul style="list-style-type: none"> • Build strong communication among the partners • Maximum transparency • Implement Conflict of Interest Policy
Potential inequalities in partners' resources and expertise determine their relative influence in the partnership's decision making.	Medium	Medium	<ul style="list-style-type: none"> • Focus on consensus based decision making • Address in formal agreements • Build relationships • Access to dispute resolution process • Involve experts on Executive Board
Poorly defined shared vision and objectives.	Low	Medium	<ul style="list-style-type: none"> • Develop shared vision with clearly defined objectives • Link corporate objectives/organizational objectives to the project objectives • Training and Education sessions • Annual reviews
Partners do not meet performance targets in a satisfactory or timely way.	Low	High	<ul style="list-style-type: none"> • Develop an agreed upon Performance Management framework • Conflict management/resolution procedures • Encourage joint ownership of problems & solutions • Relationship building
Failure to engage key stakeholders in meaningful ways.	Low	Medium	<ul style="list-style-type: none"> • Awareness & education of engagement strategy • Communication strategy • Performance measurements inclusion • Evaluation strategy

Failure of partner to comply with relevant laws and regulations.	Low	Low	<ul style="list-style-type: none"> • Identification & education of laws & regulations • Dispute resolution process • Develop safeguards throughout project
Lack of understanding with local culture.	Medium	Medium	<ul style="list-style-type: none"> • Cultural awareness training • Provide explanations – no assumptions • Dispute resolution
Financial risks No strategic approach to issues of risk, costs and benefits	Medium	Medium	<ul style="list-style-type: none"> • Define and agree with approach to dealing with costs and benefits of the partnership. • Continuous monitoring & reporting • Utilize Finance Department & Finance Committee
Loss of autonomy	Low	High	<ul style="list-style-type: none"> • Rigorous selection of partners • Clear agreements
Lack of capacity, skills, knowledge and experience	Medium	High	<ul style="list-style-type: none"> • External Recruitment Plan • Local training & development plan • Outsourcing and Contracting Options
Poor internal & external communication.	Low	Medium	<ul style="list-style-type: none"> • Establish communication plan & review • Regular meetings • Structured reports • Use of collaboration tools

Chapter 6: Community Engagement Plan

Part 1: Our Approach to Engagement

Our engagement plan is built upon our fundamental belief as Nishnaabeg that everything is inter-related and inter-connected. We view the world as being in constant motion, made up of complex networks and long-term sustaining relationships. We understand the importance of developing and maintaining relationships and the goal of keeping balance and harmony. As a relationship based system, the principle of inclusion is foundational to how we live our lives. Hence, our approach to engagement is inherently inclusive in nature and facilitates high degrees of community participation in meaningful ways.

Our engagement plan, not only facilitates the involvement of our stakeholders, but it does so in a manner that supports the revitalization of our traditional ways in a modern world. Our engagement plan facilitates the coming together for a common vision and purpose. It supports the continuous development as individuals and as a community, as it affirms our common values, builds trust, strengthens relationships, fosters responsibility and accountability and facilitates community ownership.

Purpose of Engagement:

The overall purpose of engagement is to create opportunities for our children, youth, parents, grandparents, aunts, uncles and all Biigtigong members, to embrace their responsibility for the well being of our community and future generations and become actively involved in creating a better world.

Engagement Objectives:

1. To empower those affected by this proposal to be involved in the decision-making process and the creation of solutions to challenges and opportunities that are specific to stakeholder needs.
2. To ensure the engagement processes are meaningful and seek out real contributions that influence the project design and implementation.
3. To facilitate a learning environment, where the transfer of knowledge and skills encompasses everyone who is impacted by the project.
4. To utilize cultural practices to ensure successful engagement and facilitate community pride.
5. To document and share our experiences with engagement, in order to assist in making this project more scalable and replicable.

Engagement Principles:

The following guiding principles form the basis of our engagement process and approach to ensure high-quality collaboration and meaningful active participation.

1. **7th Generation Principle:** We are responsible for the seven generations to come and to the seven generations that came before us. We will move forward embracing our past and future generations and remember the long-term impacts of our decisions.
2. **All my Relations:** Our way of life is centered on the belief that we are all related and connected. Every decision impacts everything. We will seek out holistic approaches that honour all life and our complex networks.
3. **Relationships:** Developing and maintaining relationships with all life is central to our Nishnaabe way of being, bringing rights, obligations and responsibilities that extend beyond self. We act accordingly, always striving for a state balance and harmony, as we work collectively towards our vision
4. **Renewal and Transformation:** The notions of renewal and embracing change are inherent in our worldview, as we view the world as in a state of constant flux and change. We will utilize

approaches that respond to continuous change and implement on-going evaluation to ensure we are meeting our goals and the needs of the community.

5. **Process Focused:** Comprised of approximately 70% verbs, the importance of process and actions are embedded in our language. Our approaches will be action-orientated, focusing not only on achieving results, but also on the journey and lessons that our journeys bring.
6. **Natural Laws:** We learn about what our behaviour should be by observing Mother Earth and respecting the natural laws.

Stakeholder Identification

This proposal will change the essence of the social fabric of the community. From previous engagement experiences on other projects, we understand the importance of including the diverse groups that will be impacted and/or could impact the project. We understand that this journey, especially the reclamation of our language and aadsookaanan, will potentially stir emotions resulting from historical impacts from cultural genocide. We further understand, that it is necessary to walk through these hurts together in order to move forward, heal and reclaim our culture and identity. This proposal required the input of everyone, as it provided another opportunity to build stronger individuals, families, community and a Nation.

In identifying our stakeholders, we considered those who would be immediately impacted and those impacted according to our 7th generation principle. Various target groups were identified and strategies established to facilitate meaningful engagement. Evaluations of these approaches were conducted and necessary changes were implemented and/or noted to improve outcomes. As we move forward from development to implementation, we remain committed to developing effective engagement processes that build upon best-practices while creating new and innovative ways of engagement.

Part II: Our Engagement To Date

Efforts to ensure participation amongst the diverse groups within the community have provided valuable insights that have significantly improved the final proposal. Our engagement processes to date have resulted in obtaining a clearer understanding of the challenges and opportunities that exist or could potentially exist throughout the life of the proposal implementation stage and beyond. It facilitated the development of creative mitigation risk strategies and creative means to grab the opportunities. Our engagement process has led to an excitement; it has provided a central rallying point. The following provides a list of primary stakeholders engaged to date, the methods used for engagement and the insights gained from the engagement that shaped our proposal.

Formal Leadership

Engagement with our elected leadership has reiterated their long-term commitment to the goals and the expected outcomes of this proposal. Council echoed the need to build everything in a manner that will lead to long-term sustainability. In order to ensure long-term success, the spirit of the proposal must become part of the DNA of the entire organization and community. Due to the nature and outcomes of the proposal, the entire organization and community, must strategically align resources in the collective pursuit of our vision.

Council understood the need to build STEM knowledge in order for the community to participate in the rapidly changing world. Additionally, that the creation of children who understand their traditional language, for the first time in centuries, will profoundly change the fabric of the community and our institutions. Council also restated their excitement that our proposal will impact people beyond our

community. Direction was provided to our Senior Management Team to ensure our strategies align and support the specific goals and outcomes of the Smart Cities proposal.

Our Senior Management Team is constantly creating, evaluating and reimagining our vision, our strategies, successes and failures, in our efforts to build our Nation. Working towards a common vision, our education, health, social services, lands and resources, governance, economic development, housing, and public works team, collectively and strategically aim to address the needs of our community. Our engagement with Senior Managers allowed us to work towards a common vision and develop mutually supportive and attainable goals.

Language and aadsookaanan reconstruction and revitalization is an organization wide goal and will impact our existing service delivery models. For example, upon the completion of the aadsookaanan reconstruction work, our Social and Health Department, will utilize this work to reconstruct our rites of passage and develop a service model based on the rites of passage. Another example is the re-visioning of our dispute resolution policy and the alignment with the ancient teachings contained in our aadsookaanan. A review of our Human Resource Strategy will be conducted in light of the availability of immersion video that will create understanders.

As for STEM, our departments will be providing support, in terms of placements, special speakers, student co-op work opportunities, and STEM related summer employment. Our Senior Management Team are committed to creating the necessary supports, as per the findings of our on-going evaluation and project implementation, to ensure successful attainment of our goals.

The primary engagement tool we utilized with leadership was holding face-to-face meetings both collectively and individually. This method was selected in order to facilitate critical thinking and extensive discussion. Leadership was also represented at all of our other stakeholder engagement sessions. On-going engagement with this particular group is of extreme importance to the success and continuation and growth of our Smart Cities proposal.

Continued engagement will occur through the existing structures that will facilitate on-going connections between the proposal implementation team and the leadership. Senior Management will be responsible to engage their respective staff members. Regular meetings will occur throughout the life of the project, in addition to regular reporting and evaluation. The governing team responsible for the Smart Cities project will have a representative from Council and Senior Management appointed to ensure successful implementation and alignment of goals.

Biigtigong Aadsookaanan Group and Elders

Our elders and traditional knowledge holders are considered major stakeholders in this project. Following our cultural protocols, these groups have been involved in the planning and development of our proposal, including our initial application. Our approach to engagement with our elders usually occurred in informal settings, not in a boardroom. We respected their approach in transferring knowledge and providing direction through the use of stories and personal accounts of life experiences. Individuals from this particular group have directly experienced the affects of residential and day school systems. They are able to speak first hand regarding the loss of language, the loss of their stories and methods of transferring cultural knowledge and the trials this has caused in their lives and those of their family. They are motivated to create opportunities to reconcile the impacts from this part of our history.

Through our engagement processes, these stakeholders provided strong support for the use of technology in the creation of understanders of Nishnaabemwin (our language) and the transfer of traditional

knowledge contained in our Aadsookaanan (sacred stories). Many understood the power of technology due to their involvement in our language reconstruction and documentation project. From first hand experience, they saw the data that everyone contributed and the research data, along with technology, successfully aid in reconstructing our language. Most of our elders and knowledge keepers realize that language revitalization in our community is impossible without the use of technology. Additionally, they felt that making our language and stories available on-line, was the best means to reach our youth. With only one proficient speaker left in our community, taking the data available through our language and making this accessible for everyone, forever, and utilizing immersion, on-line, provided hope and reconciliation.

They also asserted the importance of having our youth and our elders/knowledge keepers interact in real-life experiences. Our elders reminded us that our way of life is tied inherently to the land and more to a specific place. In order for us to transform our youth into better-educated, more-employable, better-grounded and more holistically Nishnaabe, we must keep them connected to their territory and the teachings that can only come from intimate relationships with the trees, birds, fish, wind, rain, rocks and every part of existence. They stressed the importance of our land-based curriculum and the need to build their relationships with Mother Earth.

The primary engagement tool used to obtain input from this target group was the use of face-to-face informal meetings. We followed cultural protocols, with the passing of tobacco and observed the traditional methods of knowledge transmission. We smudged, sang, feasted, told stories, laughed, cried, talked, listened, remembered our ancestors, sat in silence, and together made decisions in the best interest of seven generations.

Our elders and traditional knowledge will continue to play an integral part of our Smart Cities proposal implementation. The role our elders play in our world is very explicit as defined by our cultural protocols. We are responsible to acknowledge their role and facilitate the inter-generational transfer of knowledge, in a culturally appropriate manner. Our proposal sets out formal and informal on-going space for the involvement of our elders and knowledge keepers. Cultural norms dictate that we are accountable to our elders and as just this guarantees that they will be meaningfully involved in this proposal.

Biigtigong Youth

Our youth are the center of this proposal and are the main beneficiaries and reasons for this proposal. Part of our engagement strategy for this group, included the examination of results and other engagement sessions held by other community projects. We utilized this information to augment the information we obtained through our engagement sessions.

Through surveys and personal interviews with our youth, they expressed the need to be better prepared for the technological world. Additionally, they felt it was important that having a strong sense of their Nishnaabe identity was essential to their success. Not having been exposed to their traditional language and what it contains, our youth do not understand the profound sense of loss that our culture has suffered or the depth of the benefits one can receive from acquiring their language. Our initial application failed to identify this as a potential drawback to achieving our outcomes. This is addressed in our final proposal by creating a series of videos that provides an inside look at the philosophy embedded in the language and how it expresses our unique worldview. It is our intention that these videos, along with teachings from our elders, will provide our youth and other community members with the motivation to begin their language acquisition journey.

We engaged the youth through some of their established groups. Additionally, we hosted special events at their local high school, sponsored community events, conducted a youth survey, and talked to them in various public functions and locations. Several new initiatives are currently underway with our departments that aim to increase youth involvement. Our Smart Cities team have provided input into the establishment of these new initiatives and will utilise these structures to increase youth engagement. Their new approaches are youth-driven.

Parents

Projects aimed at our children will be more successful with the support of their parents. Our parental engagement findings showed an overall support of the proposal. Parents understood the importance of preparing our children and youth for the technological world. Additionally, they acknowledged the importance of language, culture and land to identity and how this was important to living good lives.

One of the biggest impacts resulting from our consultations with parents was their personal fear in not having knowledge of STEM or the language. This translated into building into our proposal strategies to help educate our parents and provide resources on how they can support their children's language acquisition and STEM learning journeys. Including supports for parents has now become an important addition to our proposal. We will incorporate strategies that facilitate family learning. Overall, the parents were excited about the new possibilities for their children and several thought perhaps they should go back to kindergarten.

Parents understood that this proposal would produce understanders of the language. They wanted reassurance that the resources necessary to move from being an understander to becoming a speaker will be available. Our 2019 survey and 2006 survey clearly state that language revitalization is a community priority and creating speakers is our ultimate goal.

We utilized surveys, community meetings, and small group discussions, as the means to obtain parental engagement. Our education staff took opportunities inside their system to engage the parents and introduce them to STEM. We have strengthened our strategies to encourage and empower our parents as they support their children's education journey. Continued parental engagement throughout the proposal implementation is important to achieving the outcomes for our children.

Biigtigong Education Staff

Biigtigong has a well-established, creative and results-driven Education team. Their participation in the development of the proposal has been important and has resulted in substantial contributions to ensuring the successful implementation of our proposal. They have identified solutions to potential problems and have substantially improved the quality of the proposal.

They have been extensively involved throughout the entire process, from visioning, to curriculum reviews and development, education philosophy and pedagogy reviews, assessment and evaluation development, privacy and data, student needs and support, student learning styles, immersion video production, professional development and capacity building, co-operative education models and re-imagining a new education model. The application of the resources developed through this proposal will be subject to the rules and regulations of the Education Department. The education department will maintain responsibility for the monitoring of individual student assessments and the overall education mandate.

Through pilot projects and professional development initiatives, the staff had the opportunity to facilitate student learning in the area of technology and engineering. This was particularly challenging, as the

teachers had little to no knowledge of either fields or experience using on-line resources in these fields. This work resulted in wonderful lessons but the most important take away is the creation of a team excited to take on the world of technology, engineering and language acquisition. Our education department and our Smart Cities team has developed a training strategy to support teachers with STEM, language and and blended learning education.

One of the major changes resulting from the engagement with the education staff relates directly to our initial goals in the secondary school program. The staff highlighted the limitations of secondary level courses as it related to our initial vision. As a result, we had to go back to the drawing board and find other ways to implement our vision. This turned out to be such a wonderful problem, which initially seemed insurmountable. This led to the development of a much more supported and comprehensive high-school program. It now provides high-school credits, real technology and engineering co-ops, summer internships and employment, youth owned and run business, career support and mentorship.

Our engagement with our education staff has been extensive and will continue to be so. We have utilized surveys, focus group discussions, small group discussions, pilot projects, training sessions, staff meetings, on-line resources, collaborative tools, and cultural events to engage our education team. We have created an organizational culture that supports and empowers our staff. The success of our Smart Cities proposal is increased by meaningful engagement and empowerment of our Education team.

Off-Reserve Members

The Smart Cities proposal provides an opportunity to strengthen the community bonds between on-reserve and off-reserve members. Through our on-line platform, off-reserve members will have the opportunity to access important community data relating to their language and aadsookaanan. Additionally, they will have access to any programs developed by the community that support STEM on-line. The meet-up-app will also help facilitate opportunities to return home to their traditional territory and participate in person with the community.

Our off-reserve members indicated support for the proposal goals and were excited about the opportunity to acquire their language from the comforts of their home. Engagement results reiterated the need to more effectively utilize technology to build stronger relationships and inclusion of off-reserve members into the building of our Nation.

Our engagement with off-reserve members included a survey, a meeting in Thunder Bay, availability of live-streamed community meetings, conference call meetings and web-site information. Our plan moving forward includes strategies to increase off-reserve participation and engagement.

Community Members at-large

Various engagement activities were held for the general population. These events included, luncheon talks, large community presentations, small group sessions, social events, survey, live-streamed community meetings, newsletters, web sites, email and social media. We received tremendous support for the project through the high levels of participation in the engagement sessions. Our general sessions were well attended and our survey return rate was high. The responses shaped our proposal by confirming we are on the right path and the community is behind the goals set forth in our proposal. Community support is very important to the successful implementation of our proposal. It does take a whole community to raise a child.

STEM Professionals and Academia

In order to ensure our proposal is academically feasible and provides a solid foundation for entry into related post-secondary programs or employment fields, we engaged various STEM professionals from the business and academic sectors. The information and insights provided by this group has significantly impacted our proposal. They played instrumental roles in selecting the curriculum and developing a sequencing of skills and knowledge. Their expertise provided us with the guidance to develop a high level K-12 STEM program, with ambitious and achievable goals. Their continued involvement in the project will ensure our programs meet the needs of our students and the ever-changing needs of the industry.

Engagement Tools

A variety of methods were used during the proposal development stage to achieve high participation rates amongst the stakeholders. Upon the completion of stakeholder analysis, where a careful review of the potential risks, interests and benefits were identified, engagement strategies were designed to suit the specifics of each group. Engagement tools were purposely selected and customized for each of our stakeholder groups. In addition to selecting appropriate tools, the presentation itself was customized for the specific audiences.

Individuals who had experience working with each of the stakeholder groups were invited to assist in the design and the development of a best-suited approach to the consultations. Involving these individuals increased our efforts of engagement to produce meaningful results and strong community buy-in and support. A list of tools used is attached as Appendix Z.

Summary of Engagement to-date

Our engagement plans to date has resulted in the successful participation from our residents and the diverse stakeholders of the project. We believe our processes were meaningful and facilitated honest and open discussions. As a community, we explored the potential barriers and risks to our success and found creative solutions to address them. We embraced the opportunities and strategically developed a difficult but implementable proposal that will make profound impacts forever. We understand the importance of engagement and make this foundational to how we build our Nation.

Part III: Engagement During Implementation

We are building upon the successes of our engagement during the final proposal development phase. Our plans for engagement during the implementation stage are aimed to foster high levels of community engagement from the diverse stakeholders. The engagement processes are intended to ensure the needs of the community are being met and the program meets its expected outcomes. The engagement process will foster community development, inclusion and provide a rallying point for members to make meaningful contributions to helping transform our youth into better educated, more employable, better grounded and more holistically Nishnaabe people.

Formal Leadership

The following will be implemented to ensure meaningful and continued engagement with our formal leaders to support the attainment of the proposal outcomes:

1. Smart Cities Executive Board: The Chief and Council and the Senior Management Team will each have a representative on the Smart Cities Executive Board. Each will be coordinate engagement with their respective group.
2. Senior Management Team: An Executive Board representative will participate in quarterly meetings.

3. Bi-monthly report: A video report will be made available to provide education, accountability and foster engagement on the project.
4. Annual Report: Produce and annual report to Council, Senior Management and Community.
5. Ceremony: Elders will be invited to an annual ceremony where we honour the goals of our proposal and ask for help and guidance from our ancestors.

Elders

The following will be implemented to ensure meaningful and continued engagement with our elders to support the attainment of the proposal outcomes:

1. Aadsookaanan Working Group: This group is comprised of elders, language carriers, traditional knowledge holders, youth, parents and technical personnel. They will work collectively with the aadsookaanan research and reconstruction team. They will act as the advisory body and assist in the decision-making process regarding aadsookaanan reconstruction. Additionally, they will report to the Executive Board who is responsible for the overall proposal. This group will remain in affect for the entire implementation stage and will meet no less than quarterly and more frequently when required. The group will coordinate community engagement sessions regarding the aadsookaanan project to keep the community informed and involved.
2. 50+ Elders Group, TEK Working Group, Place-Name Reclamation Working Group: Bi-annual engagement events will be held specifically with each of these existing community elder groups.
3. Pop-Up Engagement Sessions: We will host at minimum one pop-up Smart Cities fun and informative pop-up engagement session. These sessions will be held in support of existing annual community events, such as, moose-camp, addictions awareness week, fish-camp.
4. Ceremony: Elders will be invited to an annual ceremony where we honour the goals of our proposal and ask for help and guidance from our ancestors.
5. Bi-monthly Report: A video report will be made available to provide education, accountability and foster engagement on the project.
6. Annual Report: Produce and annual report to Council, Senior Management and Community.

Biigtigong Youth

The following will be implemented to ensure meaningful and continued engagement with our youth to support the attainment of the proposal outcomes:

1. Executive Board Seats: Two seats on the Executive Board will be reserved for youth representation. The seats will hold the same responsibility and influence as all other seats on the committee. The youth representatives will be responsible for coordinating the youth engagement strategies.
2. Biigtigong Youth Council: We will utilize the Youth Council to assist in the coordination of joint initiatives aimed at youth engagement.
3. In-school Engagement: We will host one in-school engagement session per semester.
4. Pop-Up Engagement Sessions: We will host at minimum one pop-up Smart Cities fun and informative pop-up engagement session. These sessions will be held in support of existing annual community events, such as, moose-camp, addictions awareness week, fish-camp.
5. Formal Evaluation: Our youth will be involved in the evaluation of the proposal activities and in the development of strategies to strengthen the program.
6. Celebration of Achievements: A celebration of student achievements as they r elated to the outcomes of this project will be planned each year.
7. Bi-monthly report: A video report will be made available to provide education, accountability and foster engagement on the project.
8. Annual Report: Produce and annual report to Council, Senior Management and Community.

Parents

The following will be implemented to ensure meaningful and continued engagement with our parents to support the attainment of the proposal outcomes:

1. Education Committee: An Executive Board member will work with the Education Committee to engage and inform parents.
2. Child and Family Learning Centre Parent Committee: An Executive Board member will attend 1 parent meeting per year, or as requested.
3. Existing In-School Parent Engagement Activities: Parents will be engaged through parent-teacher interviews, open-houses, progress reports, on-line media and other in-school engagement processes.
4. Parent and Student Cohort Support Program: A special program will be set up for the parents and students for the 2019 cohort moving into the CompTIA A+ program. This program will provide various support services for the duration of the program. Parents will have an opportunity to help adapt the program in order to better serve youth success.
5. On-line workshops for parents: A series of on-line interactive workshops will be held for parents to help them engage in the learning journey of their children.
6. Formal Evaluation: Our parents will be involved in the evaluation of the proposal activities and in the development of strategies to strengthen the program
7. Bi-monthly report: A video report will be made available to provide education, accountability and foster engagement on the project.
8. Annual Report: Produce and annual report to Council, Senior Management and Community.
9. Pop-up Engagement Session: We will host at minimum one pop-up Smart Cities fun and informative pop-up engagement session. These sessions will be held in support of existing annual community events, such as, moose-camp, addictions awareness week, fish-camp.

Off-reserve Members

The following will be implemented to ensure meaningful and continued engagement with our off-reserve members to support the attainment of the proposal outcomes:

1. Off-reserve meetings: A minimum of one in person meeting will occur with off-reserve members.
2. Live-stream video: All community meetings will be live-streamed to encourage off-reserve members.
3. Webinars: 2 Webinars will be held annually for post-secondary students and off-reserve members.
4. Formal Evaluation: Our youth will be involved in the evaluation of the proposal activities and in the development of strategies to strengthen the program
5. Bi-monthly report: A video report will be made available to provide education, accountability and foster engagement on the project.
6. Annual Report: Produce and annual report to Council, Senior Management and Community.

Community at large

The following will be implemented to ensure meaningful and continued engagement with our community to support the attainment of the proposal outcomes:

1. Community Meeting: A minimum of one in person meeting will occur with on-reserve members.
2. Live-stream video: All community meetings will be live-streamed to encourage off-reserve members.
3. Nishnaabe Clan System: A new engagement system based on our clan system will be introduced for the first time. This is an extensive engagement process that is designed to include all sectors of the community. This system will be used as one of our primary methods of community engagement.

4. Formal Evaluation: Our youth will be involved in the evaluation of the proposal activities and in the development of strategies to strengthen the program
5. Bi-monthly report: A video report will be made available to provide education, accountability and foster engagement on the project.
6. Annual Report: Produce and annual report to Council, Senior Management and Community.

Nishnaabe Clan System

Reconstruction and reclamation of our ancient Nishnaabe ways is a central to our vision. In keeping with the spirit of our vision, we intend to utilize our traditional clan system as the primary method to our engagement strategy. The clan system is built upon principles that are foundational to our world-view and philosophical understanding of our world. These principles capture cultural values, such as, non-hierarchical structures, cooperation, collaboration, reciprocity, communal living and promotes the importance of relationships.

Our clan systems are reflective our cultural structures that emerges from our relationships with the land and a naturalistic cosmology. We look to the natural world and the laws that exist on the Earth, as our guiding principles for the development of our systems and structures. Our clan systems consist of seven primary clans: Loon, Crane, Fish, Bird, Bear, Marten and Deer, each having several sub-clans. Each clan has adopted a spirit animal as their totem and this animal is a symbol of how the members of each clan should conduct themselves and relate to the world.

This system organizes work and establishes responsibilities of individuals and the collective. Each clan holds specific duties and responsibilities to take care of the physical, mental, emotional and spiritual needs of the community. Some of these responsibilities include, philosophy, law making, decision-making and enforcement, governance, learning and teaching, communication, economics, trade, defense, child rearing, providing, conflict resolution, and strategy. The clan teachings are agreements that govern how individuals and families take care of each other and the community as a whole.

We are choosing to implement our clan system for the first time within a modern context. We will utilize the clan structure and protocols for the purpose of community engagement. Each clan will appoint a representative to the main clan body. The main body will work with the Executive Board, to determine the most effective and productive strategies to empower and engage our residents. Each clan leader reports directly to his/her clan and the clan determines how they will involve the members of their clan in the process. Clans determine their own internal methods of communication and decision-making. Individual clan decisions are brought back to the main clan and our consensus decision-making model and dispute resolution models will govern the process. This is the basis of our engagement plan.

Risks and Mitigation Strategies

Our approach to risk and how we determine and mitigate or avoid risk is discussed in Chapter 3. This table summarizes the risks associated with community engagement and the risk management approach and mitigating actions to be taken.

Risk	Likelihood	Impact	Risk Management Approach/Mitigating Actions
Lack of Support of the proposal	Low	High	<ul style="list-style-type: none"> Establish meaningful process Be accountable & report Provide education
Loss of faith and trust if there is no consistent follow-up by staff.	Low	High	<ul style="list-style-type: none"> Establish measureable goals. Plan for short term achievements Set achievable action plans Be accountable and transparent
Unrealistic stakeholder expectations and demands.	Medium	Medium	<ul style="list-style-type: none"> Be clear about the reasons for engagement Clear and consistent communication Provide education Dispute resolution process
Lack of interest	Medium	Medium	<ul style="list-style-type: none"> Select group appropriate strategies Know your audience Ensure the activities are fun, social and specific to your audience
People made feel excluded	Low	Medium	<ul style="list-style-type: none"> Use existing networks and structures Provide several opportunities for people to have input Ensure culturally appropriate methods Customize approach to audience we
Limited knowledge on clan system	High	Medium	<ul style="list-style-type: none"> Utilize knowledge holders in community Conduct research Bring in elders who know about clans Training Ceremony
Triggers trauma – direct and inter-generational	Medium	High	<ul style="list-style-type: none"> Create awareness of possibility – share previous examples/similar stories Include ceremony Social Services support programs Cultural Coordinator support programs
Don't meet outcomes	Low	High	<ul style="list-style-type: none"> Set up good planning Realistic outcomes – needs based – measurable Set up reporting and accountability Supportive budget, governance systems, management system
People are not aware of what's going on	Medium	Medium	<ul style="list-style-type: none"> Communications plan Use various approaches to inform people Be creative – go to them
Lack of time	Medium	Medium	<ul style="list-style-type: none"> Live stream meetings Use BiigtigongX Provide information to them – video, tv, print, car, phone Make it interesting, fun and useful

Chapter 7: Privacy

Introduction

Privacy is of the utmost importance to our leadership, project team and community as a whole. Given that this project entails a blended learning environment of both online and real-world opportunities this project will result in the generation of new data from users creating accounts on the Open edX platform. As such, it is critical that this project be developed and implemented with significant consideration given to privacy and data security. The following chapter outlines our data management plan.

Preliminary Privacy Impact Assessment (PIA)

Given that this project involves the collection of some personal data, it is necessary to complete a Privacy Impact Assessment (PIA). In preparing this proposal, the project team has completed a preliminary privacy impact assessment through reliance on applicable regulations and our internal governance strategy and through incorporating feedback from the Office of the Privacy Commissioner of Canada. The PIA is submitted under separate cover.

The Preliminary PIA covers all proposed activities under the SMART Cities project, including how data will be sourced and accessed through the Open edX platform. Considerations have also been made for: Data Storage, Data Access, Data Retention and Data Disposal required throughout the lifespan of this project. The project team will continue to assess the project's privacy risks and impact to determine if there is a need to update the privacy analysis and/or the PIA report. This ongoing assessment is an essential part of identifying and mitigating new issues and changes impacting privacy that may arise during the implementation phases.

This Chapter of the Smart cities Challenge includes much of the information includes in the preliminary PIA, as well as additional details as specified.

Compliance with Applicable regulations.

The following table outlines the result of our compliance analysis:

Policy Process Statement	Process and Compliance measures
Purpose of the collection of personal information	<p>This project involves creating a blended learning environment with both online and real-world components. The nature of an online learning environment results in the collection of minimal personal information to create an account, name, user name and password. Additionally, certain functionalities of the Open edX platform, such as the meetup application or time spent watching videos, will also generate data on a user's location and behavior patterns.</p> <p>Another source of data is the videos, stories, overdubbing etc. that will be created for the language immersion education and STEM bilingual courses portion of the project. This data will be stored on the Open edX platform as well as in a redundant hard-copy format (ie, transcripts, tapes etc) to ensure data is not lost. There are no additional privacy concerns associated with storing physical copies of the educational materials.</p> <p>All information identified is absolutely necessary for participating in the project and/or for monitoring the success of the project</p>

Source of personal information/ Accuracy	<p>Initial data will be provided directly by users to generate their profile and then data will be tracked using their Open edX account. For example, it will be necessary to track users time spent watching video to provide assurance that the student has completed the necessary videos for completing the curriculum requirements.</p> <p>Given that the curriculum will be developed in a blended learning environment (brick and mortar and online) this will only include the collection of data related to activities completed in the Open edX platform. Activities completed within the brick and mortar school will continue to be tracked by teaching staff under existing processes.</p> <p>Qualitative data will also be collected by teachers for users to inform feedback on the project, monitoring, evaluation and control purposes. Personal information will be collected directly from the Open edX platform by teaching staff only. Collection of data from teaching staff will be required and is appropriate given the context of this project.</p> <p>Given that information is provided directly by the user through the online platform, we do not anticipate any major inaccuracies. Likewise, the anonymized and summarized data to be provided by teaching staff is subject to their current process which ensure accuracy and privacy of student information.</p>
Accountability and Openness	<p>The project team is accountable for the data collection, management and safeguarding results from this project. The project team has intentionally minimized the amount of personal information to be collected through use of Open edX platform, as users will only need to provide their name, user name and password to create an account.</p> <p>Likewise, we will implement a process that enables students and their legal guardians to provide informed consent to participate in this voluntary process, thus ensuring they understand what information will be collected, why, and who will have access to it.</p>
Manner of collection of personal information	<p>The data to be collected is minimal and relatively not intrusive. It is similar (if not identical) to the information already being collected and managed by the school system. Similarly, the information collected via the Open edX platform is typical for any online platform.</p> <p>Use of the meet up application is voluntary, and any users will be provided a privacy statement to agree to prior to using this forum (i.e. authorizing sharing of user location data)</p>
Limiting Use, disclosure and Retention	<p>Teaching staff are already subject to policies and codes of conduct that govern how they treat personal information, through to physical or technical controls that protect the information. Safeguards that will be into place include physical security; IT security; staff training; policies, confidentiality clauses in contracts with external providers etc.</p> <p>Information, such as language videos, transcripts etc. are to be stored indefinitely as these are important records of our language and traditional teaching that we are attempting to preserve as part of this project.</p> <p>Personal information will only be used for the purpose it was collected for, and as described. The personal information collected for the students will only be retained until graduation. Following successful graduation, all student data will be removed from the server and student accounts will be disabled.</p>

	<p>The collection, use, retention and disclosure of personal data, and particularly student data, should always be limited to what is necessary to fulfil authorized purposes. Reducing the risk posed by the excessive collection of student data is a core principle that guides this project's data processing practices.</p>
Access and correction to personal information	<p>Users will be able to access the account information on the Open edX platform. Information collected by teachers will be subject to the policies and procedures currently in place in the school system. Information will be shared with students and parents through existing channels (i.e. report cards). Access logs will be implemented to track access to personal information.</p> <p>Teachers can correct their existing report card writing process based on information collected. For example, should a student choose not to use the meet up forum, the teacher would reflect the true involvement in traditional activities in that student's report card, regardless of the data output from Open edX.</p> <p>Requests for personal information to be corrected will be handled on a case by case basis. However, we do not anticipate any major concerns with meeting this principle as all information collected is basic in nature and expect most changes, if any would be minor in nature such as their name, username or password changes.</p>
Accuracy etc. of personal information	<p>Given that information is provided directly and automatically by the user through the online platform, we do not anticipate any major inaccuracies. Likewise the anonymized and summarized data to be provided by teaching staff is subject to their current process which ensure accuracy and privacy of student information.</p> <p>The process for anonymizing the data will involve the teaching staff providing the project team a summary report detailing quantitative data needed to provide details needed to track and report on performance indicators. This will include:</p> <ul style="list-style-type: none"> • number of K-12 STEM courses successfully completed by K-12 students • number K-12 students needing remedial help in STEM subject areas • number of K-12 students who know the key concepts expressed in each of our core aadsookaanan • participation rate in number of traditional Nishnaabe activities for K-12 Students <p>No personal or identifying information will be shared, nor will it be required, by the project team. The summarized data, omitting all personal information, is required by the project team to track, monitor and evaluate the implementation of the project, and to make course corrections when necessary. Qualitative data will also be collected for teachers to provide feedback on the project, for monitoring, evaluation and control purposes.</p>
Data Disposal	<p>Data stored on the Open edX platform will be expunged following a student's graduation.</p>

Data Management process

This section outlines the types and methods of data collection, generation, analysis, storage, and preservation that reflects the entire data lifecycle in project design. The Data to be collected during this project is associated with the inputs and outputs, as described in our performance measurement strategy presented in Chapter 2.

Step 1: Gain informed Consent:

In order to ensure participants (and their legal guardians) make an informed decision when providing their consent to participate in the Open edX platform, a privacy seminar will be held at the community centre prior to program roll out. During this seminar, the project team will review the project and the content of this Privacy Impact Assessment to ensure participants (and their guardians) are knowledgeable of the inherent risks of participating in a partially-online learning platform. This seminar will overview what information will be collected and why, who will have access to this information once an account has been created and what agreements are in place (at that time) with all 3rd party providers. This seminar will also allow community members to voice their privacy concerns with respect to participating in an online environment. The project team will also present the policies and procedures developed thus far to mitigate any identified privacy risks and how any data breaches will be managed, as described within this document and further iterations of the PIA.

Should students, or their legal guardians, opt-out of the online-augmented (i.e., blended-learning) program, they will be given alternative means of participating in the k-12 curriculum at the brick and mortar school. It is important to note the participation in this Open edX platform is 100% voluntary and if not adopted will not diminish the learning of non-participates. Participants and their guardians will be provided a consent form outlining the privacy concerns and risks, for review and signature prior to enrolling in the Open edX platform.

It should be noted that as outlined in the PIA, in an effort to mitigate risks, the project team will work with Technology/Software providers, including Open edX to enter into a contractual agreement which will ensure personal information is handled in a privacy-compliant manner, and restricts the third party's use of personal information for purposes outside the project scope. In all cases the user will be advised about any third party's privacy policies/statements when directed to a third-party site for additional links or resources, as part of informed consent process.

Step 2: Personal Information Data Collection

Users of the Open edX platform will be required to provide the following types of personal information. This information will then be used by teaching Staff to offer better service to participants.

- Account creation and login information, including user name and password *
- Location information - anytime the student interacts with Open edX platform, location data is generated **
- Patterns of behaviour (which educational video were watched and for how long)

*Students will not be asked to provide their address, date of birth or other identifying information for the purposes of setting up an account with Open edX. The intent of collecting a user name and password is only to allow a student to create an account and login to the Open edX platform and to enable teachers to track a student's progress.

**Due to the very nature of the internet anytime a person connects, the media that is being delivered to that person is tracked using a particular 'IP address.' Location data is then deduced from that IP address. There is no reasonable (or perhaps possible) way to interact with the internet without generating location data. Total location privacy is not possible within the current

organization of the internet since IP addressing is a foundational part of the internet. As such we can only attempt to maximize our privacy online - while accepting that our location will always be exposed.

Step 3: Data Analysis

Information to be collected will include the name/user name of the student and the amount of time a student spends watching a video, as well as any participation in any traditional activities as tracked through the meetup forum functionality. Similarly, should students identify participation in traditional activities through the meetup forum functionality of Open edX, this will generate location data.

No additional information will be provided regarding the student's performance in other school programs. Again, this is a voluntary blended-learning environment (online and/or brick & mortar, but not online only) and therefore the intent is to not replace what is currently being done at the school level. All collection of student data will be limited to what is needed for educational purposes.

Teaching staff are the only project resources who will have access to the student specific data. No other project team member will have access to individual student specific information. No information will be made public. Teachers require access to student specific data as it is needed ensure a student has completed the required curriculum. Behaviour data is also required to make teachers aware of how long a student struggled with a particular math problem, or how many times the student rewatched a video, and which sections of the video were rewatched, for example. This is one of the main benefits of using a blended-learning approach as this "behavioural pattern" data is what helps our teachers teach more effectively.

Teachers will not provide information about a student to Open edX nor to Appsembler. The flow of information is from student to Open edX to teacher, which is then provided back to the student in the form of a report card and to the project team in the form of aggregated summary data for performance measurement tracking only. In other words. Teachers will summarize the data and submit to the project team for performance monitoring and process improvements. I

With respect to information collected by 3rd parties, this will all be as per the contractual agreement. All terms of these agreements and risks to privacy resulting from 3rd party platforms and software will be communicated to users (and guardians) as part of the informed consent process.

Step 4: Store and Dispose of Data

Minimal student data will be stored on Open edX platform, over the course of their school. Data stored by teachers (i.e. in the form of records and report cards) is governed by their existing policies and procedures. With respect to input data such as the videos, stories, overdubbing etc. that will be created for the language immersion education and STEM bilingual courses portion of the project. This data will be stored on the Open edX platform as well as in a redundant hard-copy format (ie, transcripts, tapes etc) to ensure data is not lost. There are no additional privacy concerns associated with storing physical copies of the educational materials.

All information identified is absolutely necessary for implementing the project, participating in the project and/or for monitoring the success of the project. Student Data stored on the Open edX platform will be expunged following a student's graduation.

Other Uses

There are no plans for and transmission, and plans for re-use, re-distribution, derivative production, archiving, student personal data. All other data, including videos, are to be made publicly available.

Open and Big Data Strategies

Only once this framework is expanded to different communities with different objectives will the use of big data be necessary to track the different uses and functions of this curriculum. At this point, open data will be used to report progress, engagement, best practices, etc. This information will not pertain to specific individuals, but specific user bases as whole. For example, data may summarize user rates, and immersion progress of a specific community, but not specific students of that community.

Privacy Risks and Mitigating Strategies

Risks and Mitigation Strategies are discussed throughout this chapter (and others). Three key risks are summarized in the table below:

Risk	Mitigating Strategy
Use of information by 3rd parties	The project team will work with Technology/Software providers, including Open edX to enter into a contractual agreement which will ensure personal information is handled in a privacy-compliant manner, and restricts the third party's use of personal information for proposes outside the project scope. In all cases the user will be advised about any third party's privacy policies/statements when directed to a third-party site for additional links or resources, as part of informed consent process.
Security Breach	<p>The project team will develop and implement a breach response policy and protocol that addresses privacy and security risks for both the online and offline platform/storage methods.</p> <p>Information custodians, namely Teaching staff, Chief and council, and the database administrator must immediately contact the Database administer and Privacy Officer, informing him of the following:</p> <ul style="list-style-type: none"> • the nature of the breach; • the information that was exposed; • to whom it was exposed; and • for how long it was exposed. <p>The Information Custodian will work with the Privacy Officer who will advise whether notice to affected individuals and the Office of the Information and Privacy Commissioner of Ontario (IPC) is required. If such notice required, the Privacy Officer will work with the information custodian to meet the needs of the IPC.</p>
3rd party software/technology becomes outdated	Reliance will be placed on existing websites for STEM education (i.e. code.org). As these are established organizations, that are constantly updating and revising content to better engage youth and other users in this field, there is some chance that this 3 rd party software at some point may become dated. However, SMEs will continuously monitor content and explore alternatives should the desired content become outdated or unavailable

Chapter 8 - Financial Management Plan

Introduction

Biigtigong has a responsibility to its citizens to accurately account for public funds, to manage its finances effectively and efficiently, and to plan to provide quality needs-based services. As a government we are responsible for implementing effective systems of public financial management and for utilizing these systems to safeguard public assets. The effective management of public finances is fundamental to the development and growth of the community.

Financial management is a critical prerequisite for success. It is an integrated process that brings together strategic planning, budgeting, accounting, reporting, controls, procurement, auditing, policy and people with the goal of managing resources strategically to achieve the project's outcomes. Effective financial management includes planning, organizing, directing and controlling the financial activities to support the organization's goals.

Authority

Biigtigong's Constitution assigns Chief and Council the responsibility to effectively and efficiently manage and control public funds. They have the authority to establish institutions and appropriate legislation, policies and procedures, with supporting governance structures, to govern the financial matters of the First Nation. The Constitution recognizes the leadership's responsibility for accountability, transparency and results.

Financial Management Objectives

Biigtigong's financial management objectives are as follows:

- To enable the delivery of quality services to our membership that are geared to meet their needs.
- To make effective and efficient use of the available resources.
- Be accountable to our membership and other stakeholders.
- Prepare for long-term sustainability.
- Manage risks.

Sustainability and Diversification

The goals of our Smart Cities proposal are aligned and part of Biigtigong's bigger and longer-term vision. As such, it is not considered an independent project, with a start and end date. Our five-year implementation stage is designed to develop the necessary resources and capacities to ensure long-term sustainability of the program goals and objectives. As we begin our implementation, collaborative efforts with our internal departments on specific aspects of our proposal are setting the stage for long-term sustainability and integration.

Governance Structure

Establishing appropriate governance structures that support and facilitate the delivery of our programs and services to our membership is part of an effective financial management plan. Chapter 5 describes the governance structures.

Responsibilities

Establishing clear roles and responsibilities and ensuring a shared understanding of these roles are important to sound financial management. Financial management roles and responsibilities are defined in the financial policies. In addition, these are reiterated in the details of job descriptions, department

mandates and terms of references for committees and boards. All of these are in place for the Smart Cities proposal implementation.

The Chief and Council's primary responsibility is to establish appropriate laws and policies to govern the sound financial management of finances. Management is responsible for the implementation of these laws and policies and ensuring adequate procedures and systems are in place for support. Management is responsible for communicating the expectation and duties to staff. Staff and operating personnel are responsible for carrying out the internal control activities set forth by management.

Transparency

Creating a culture of transparency throughout the organization is one of the foundations of sound financial management. Developing principles of careful budgeting, reporting and auditing, combined with internal controls and transparency ensures a robust system of financial management.

The following provides some measures that Council has taken to provide transparency:

- Open Council meetings; public access to by-laws, minutes and reports.
- Council publishes the annual approved budget and financial statements.
- We have expanded our Internet and social media presence including some online services.
- Feedback and complaint mechanism are in place.
- Procurement policy is comprehensive and regulates the procurement of goods and services, including human resources.
- Conflict of Interest policy guides the disclosure and management of conflicts of interest.
- Codes of Conduct are established for members of Council, management, staff, committee members and the membership.
- Public access to information is guided by policy.
- Extensive community engagement culture; continuous opportunity for community to be involved in the decision-making processes.

Our Smart Cities team will adhere to the regulations and expectations established by Council via their formal and informal policies. Our team is committed to building an open and transparent relationship with all of our stakeholders. Transparency is of special importance to our team, as we are making new paths and facilitating a significant change at the community level and establishing trust is important. We will create opportunities to be transparent and ensure our organizational culture and systems support transparency.

Rigorous Internal Controls

Internal controls ensure that the organization is in compliance with laws and regulations and protects assets against theft and misappropriation. In general, segregation of financial duties to provide a set of checks and balances, proper authorization of expenditures, physical control of assets, and maintenance of records and documents supporting financial activities are the foundation of an adequate control environment. Sound financial management also requires regular reconciliation and review to ensure that activities reported in the organization's accounting records are crosschecked against the supporting documents.

Internal control is all of the policies and procedures management uses to achieve the following goals:

- Safeguard assets - well-designed internal controls protect assets from misappropriation of public funds, accidental loss or loss from fraud.
- Ensure the reliability and integrity of financial information. Internal controls ensure that management has accurate, timely and complete information, including accounting records, in order to plan, monitor and report business operations.
- Ensure compliance - Internal controls help to ensure the First Nation is in compliance with the many federal and local laws and regulations affecting the operations of our business.
- Promote efficient and effective operations - Internal controls provide an environment in which managers and staff can maximize the efficiency and effectiveness of their operations.
- Accomplishment of goals and objectives - Internal controls system provide a mechanism for management to monitor the achievement of operational goals and objectives.

Our finance policy and operating procedures identify the internal controls that are mandatory for all operations. These controls are regularly reviewed and adjusted accordingly in our efforts for continuous improvement. Our Finance and Audit Committee, in conjunction with our Senior Management Team, provide Council with recommendations for improvement. The implementation of our Smart Cities proposal will be subject to the internal controls and procedures as established by our financial management systems.

Finance Policy Manual

Our finance policy manual is the central means to communicate the financial controls and responsibilities. In order to successfully manage a project a coherent set of accounting procedures and standards are required. Our finance policy manual addresses the following matters:

- Delegated and Assigned Responsibility
- Planning and Budgeting
- Tangible Capital Assets
- Investments
- Procurement
- Payroll
- Benefits
- Travel and Training
- Loans, Guarantees and Indemnities
- Expenditures and Payables
- Borrowing/Debt
- Financial Reporting
- Insurance
- Records Management and Retention
- Risk Management
- Information Technology
- External Audit

Financial Management Software

Biigtigong utilizes a financial management software program named Xyntax, specifically designed to meet the financial needs of First Nations. The software manages all accounting procedures of the organization, such as, cash flow management, general ledger, expenses, payments, assets, income and purchasing. It efficiently manages all financial administrative processes. The software is customizable to suit the specific needs of our organization. The staff who will be assigned the

responsibility of financial management are familiar with and have extensive experience with the financial management software that will be used for the Smart Cities project. The software will also allow for specific project codes that could coincide with the identified outcomes and milestones.

Accounting Methodologies

Biigtigong utilizes project based accounting. Project accounting tracks all the financial components of a project. It provides access to more accurate and timely information when making decisions. It allows for an actual-to-budget analysis. Project accounting provides for more accurate accounting of project job costs. It provides for a more credible audit process and facilitates better control over projects. Project accounting also can help gauge the team's workload capacities.

Accrual basis accounting

Biigtigong uses accrual basis accounting methods. Under the accrual basis, revenues and expenses are recorded when they are earned, regardless of when the money is actually received or paid. Accrual basis provides a more realistic idea of income and expenses during a period of time. This method requires a careful monitoring of cash flow.

Generally Accepted Accounting Principles (GAAP)

Biigtigong complies with the Generally Accepted Accounting Principles. GAAP is a collection of commonly followed accounting rules and standards for financial reporting. GAAP compliance makes the financial reporting process transparent and standardizes assumptions, terminology, definitions and methods. The purpose of GAAP is to ensure financial reporting is transparent and consistent from one organization to another.

Financial Reporting

We adhere to a regular internal reporting system to ensure we are meeting our financial goals and objectives. Program Directors follow a strict regiment to review financial reports monthly and complete a series of financial tasks. Central to effective decision-making and having the ability to take corrective actions is having access to accurate and timely financial data.

Financial reporting requirements stem from a variety of sources, and financial reports serve many purposes. For example, they serve as tools for use by managers to control their departments and to monitor the extent to which management's objectives are being achieved. They also provide information to external parties on an organization's financial operations and compliance with a variety of requirements. Our Smart Cities management team will adhere to the reporting requirements as defined by Biigtigong and our funding agencies. We will ensure stakeholders have access to timely and accurate reports to allow for good decision making.

For the purpose of our proposal, our reporting system will have to be customized to accommodate the meeting of milestones, as per the contribution agreement. The SC Executive Board will provide regular written reports to the Director of Finance regarding the status of achieving the milestones. These reports will be developed based on the performance reports received from the project implementation staff. These reports will provide the necessary information needed to be the reporting requirements of Infrastructure Canada.

Human Resource Management

Human resource management is a critical success factor for the First Nation and it directly determines the business outputs. Human resource development and management play an important role in the

overall financial management of our operations. We aim to maximize employee performance and create a supportive organizational culture to facilitate this.

Human Resource Planning

Through effective job analysis and design, we created positions with job descriptions and specifications to meet the needs of the organization and project implementation. The following chart summarizes our human resource requirements to implement our Smart Cities proposal. The majority of the budget will be allocated to human resources, making human resource management especially important to our financial management plan.

Human Resource Requirements – Smart Cities Proposal					
Position	Reporting to	Status	Time Period	Salary Grid Classification	Salary Range
Governance					
Proposal Lead	Executive Board	½ time	5 year	SM2	84,864-95,472
Project Coordinator	Proposal Lead	Full time	5 year	PS3	41,457 -54,092
STEM Implementation					
SC Education Lead	Education Director	Full time	5 year	T2.2	55,500 -81,600
CompTIA A+ Lead	SC Education Lead	Full time	5 year	T2.2	55,500 -81,600
Co-op & Business Coordinator	Economic Development Manager	Full time	5 year	PS3	41,457 -54,092
reBOOT Coordinator	Economic Development Manager	Full time	5 year	EA2	29,766 -38,839
WaaWaa Immersion Video Production					
Immersion Lead	SC Education Lead	Full time	5 year	T2.2	55,500 -81,600
WaaWaa Instructor	Immersion Lead	2 -½ time	5 year	ECE2.2	37,756-49,263
Nishnaabemwin					
Audio Overdub	Proposal Lead	Full time	5 year	Contract	85,000
Bilingual STEM	Proposal Lead	Part time	5 year	Contract	12,500 – 55,000
Meet-up Function					
Meet-up Coordinator	SC Education Lead	Full time	5 year	PS1	37,669-49,149
Technology					
BiigtigongX Administration	Project Coordinator	Part time	5 year	Monthly contract	1,200
Database Administration	Project Coordinator	Part time	5 year	Monthly contract	500

Human Resource Management Tools

Biigtigong uses the following tools to assist in our efforts to maximize employee performance and meet our operational goals and outcomes:

1. Hiring Policies: Provides process to hire, interview, recruit, and determine if you will need to implement training or development for potential or current employees.
2. Termination Policies: Provides process to deal with termination or voluntary resignations.
3. Job Descriptions: Establish clear roles and responsibilities and qualifications.
4. Employee Performance reviews: Provides mechanisms to conduct performance reviews and evaluations of staff.
5. Employee Handbook: Provides a snapshot of our policy guide.
6. Health and Safety Policy: Provides health and safety standards and procedures.
7. Discrimination/Sexual Harassment Policies: Process on how complaints and investigations will be handled.
8. Detailed Policies: Regulations regarding benefits, such as, vacation, holiday, personal, and sick pay, company benefits, salaries, etc.

9. Required Policies: Required policies are anything that the federal, provincial or local governments require (WSIB, EI, CPP).
10. Specific Policies: Confidentiality Policy, Social Media Policy, Cultural Leave Policy.

The Budget Process

The budget process is one of the most important components of successful financial management. The budget process extends beyond the preparation of a document that appropriates funds. Budgeting is strategic nature, encompassing multi-year financial and operating plans that allocate resources on the basis of identified goals. It serves as the performance benchmark for all financial decisions. A budget ensures that an organization can fund its commitments, meet its financial and program objectives and control spending. It allows for measurement of performance and the identification of potential problems. The budget is the overall financial framework.

The development of Biigtigong's Smart Cities budget was done in accordance with the budget policies of the First Nation. The budget was also developed in consideration of the expectations as identified in the Smart Cities Finalist Guide. Our budget supports the implementation of our proposal and the achievement of our goals.

Biigtigong's Annual Planning and Budgeting Schedule

Task	Individual Responsible	Timeline
Annual planning kickoff meeting to present major budget policies, multi-year financial plan direction and guidelines for the strategic plan.	Director of Finance, Senior Management Team, Finance & Audit Committee	3 rd week in November
Update Tangible Capital Assets.	Senior Management, Director of Finance	1 st week in December
Each Department prepares a thorough analysis & projection of all expenses for the budget yr.	Senior Management Team	2 nd week in January
Consolidate all draft budgets including capital budget into one master budget;	Director of Finance	4 th week in January
Multi-year plan and strategic plan developed or updated.	Senior Management, Director of Finance	1 st week in February
Senior management reviews draft budgets, multi-year plan, and strategic plan.	Senior Management, Director of Finance	2 nd week in February
Present budget, multi-year plan, and strategic plan to Finance & Audit Committee for review, discussion, and modification.	Director of Finance, Senior Management Team, Finance & Audit Committee	3 rd week in February
Incorporate Finance & Audit Committee changes to any of Planning Documents	Director of Finance, Senior Management Team, Finance & Audit Committee	1 st week in March
Inform the membership or involve the membership in consideration of the annual budget and the multi-year financial plan.	Director of Finance, Senior Management Team, Finance & Audit Committee, Council	3 rd week in December
Council reviews & approves budget/multi-year plan/strategic plan based on recommendation from the Finance and Audit Committee.	Council, Finance & Audit Committee	3 rd week in March
Distribute approved budget and strategic plan to Department Heads and any other appropriate staff and community.	Director of Finance	3 rd week in April
Inform membership of approved budgets.	Director of Finance, Senior Management Team, Finance & Audit Committee, Council	3 rd week in May
On going monitoring, reporting and reviews.	Director of Finance, Senior Management Team, Finance & Audit Committee, Council	Throughout the year

Major Budget Considerations

Strategic Plan Integrations

An effective financial management system needs to support the organization's strategic plan and vice versa. It is part of a network of systems bound together to provide high-level services to our membership in order to meet their needs. Sound financial management is critical to the success of long term strategic planning and short term operational planning. Biigtigong has well-established strategic planning processes. Financial management and budgeting systems are designed to facilitate project implementation.

Human Resource Requirements

Once the human resource needs were identified and job specifications determined, the positions were reviewed in relation to our salary grid and policy. The review was to ensure positions are properly categorized according to the criteria established in the policy. Each new staffing position resulting from the Smart Cities proposal has been categorized and is subject to the salary range provided within the grid. Estimates for mandatory employer related costs were incorporated into the budgets.

Contracts will be awarded for the Nishnaabemwin audio overdub work. This will be done in accordance to Biigtigong's procurement policies. The following charts summarize the range of production times to produce 1 hour of video. We conducted some WaaWaa pilots tests and our results varied due to the individual making the video, the content of the video, familiarity of the content, video recording, prop preparation and location. These variables have been considered in our estimations of producing WaaWaa video and overdubbed WaaWaa video. We assume that we will produce video quicker once we have a workflow and some experience in production. We have identified mitigation strategies to address the risks associated with video production.

NISHNAABEMWIN AUDIO OVERDUB PRODUCTION TIME ESTIMATIONS					
Hours of video to be produced each year	100 Year 1	350 Year 2	450 Year 3	550 Year 4	550 Year 5
Ratio 6:1 (hours)	600	2,100	2,600	3,109	3,100
Ratio 5:1 (hours)	500	1,750	2,250	2,750	2,750
Ratio 4:1 (hours)	400	1,400	1,800	2,200	2,200
Ratio 3:1 (hours)	300	1,050	1,350	1,650	1,650

Salary Range: \$85,000

WAAWAA IMMERSION VIDEO PRODUCTION TIME ESTIMATIONS					
Hours of video to be produced each year	200 Year 1	400 Year 2	400 Year 3	500 Year 4	500 Year 5
Ratio 6:1 (hours)	1,200	2,400	2,400	3,000	3,000
Ratio 5:1 (hours)	1,000	2,000	2,000	2,500	2,500
Ratio 4:1 (hours)	800	1,600	1,600	2,000	2,000
Ratio 3:1 (hours)	600	1,200	1,200	1,500	1,500

Salary Range: \$37,756 - \$49,263

BILINGUAL STEM VIDEO PRODUCTION TIME ESTIMATIONS					
Hours of video to be produced each year	50 Year 1	175 Year 2	225 Year 3	275 Year 4	275 Year 5
Ratio 5:1 (hours)	250	875	1,125	1,375	1,375
Ratio 4:1 (hours)	200	700	900	1,100	1,100
Ratio 3:1 (hours)	150	525	675	825	825
Ratio 2:1 (hours)	100	350	450	550	550

Salary Range: \$50/hour

In our pilot video production exercises various problems arose that were immediately mitigated on the spot. Our goal is to make high quality understandable immersion video. However, we need to do this within a reasonable amount of time and efficiently. We implemented some different strategies and found

improvements in production time. We will have to closely monitor the production of video and continuously look for ways to better streamline the production. Our project based accounting software will assist us in tracking hours of production and providing us with more accurate numbers to make decisions.

Board and Committee Costs

Expenses related to the operations of our 2 committees and the Executive Board has been incorporated into the budget. Expense categories included honorarium, travel and training, in accordance to Biigtigong's policy and the scheduled meeting and/or training times.

Technology Costs

Expenses related to the administration and management of BiigtigongX, our on-line platform, including the costs of Appsembler and the database has been included in the proposal. We carefully examined the option to utilize Appsembler as our main administrator versus hiring a full time person. The decision was made to use Appsembler due to lack of qualified resources in the community and the pricing was cheaper than hiring a full time staff. Expenses for some education licenses, supplies and equipment are included.

Training

Annual training dollars has been allocated to each year. Training and capacity building at the local level is of primary importance. Building internal capacity for the purpose of long-term sustainability is always one of our ways to achieve our goals. Our training will be very specific to the needs of the projects. We will implement a training video series, which demonstrates our experience and best-practices from implementation.

Community Engagement Costs

We included a budget for the community engagement expenses. Part of these expenses includes for some meetings off reserve. Engagement activities will support the implementation of our engagement strategy, as outlined in Chapter 6.

Revenue

Biigtigong has committed \$100,000 a year to support the language revitalization efforts. We have not identified any other revenue sources, other than Infrastructure Canada. We are committed to looking for additional sources of revenue, should our proposal be selected. Although revenue is not being transferred directly to the Smart Cities accounts, other organization Departments are making contributions to the project implementation. These contributions are listed further down in this chapter.

Budget and Project Milestones

Our budget was developed to facilitate the implementation of our proposal and the attainment of our outcomes. An accompanying detailed listing of milestones that will trigger payments supports the budget. The milestones are broken down according to fiscal quarters per fiscal year. Further details regarding the milestones and the specific outcomes and indicators are discussed in Chapter 2. We feel the milestones identified are measurable and achievable and provide a sound basis to determine the release of payments. We will continually monitor and evaluate our entire process and making the necessary adjustments to ensure we are meeting the goals of our project. As part of our commitment to transparency and accountability, we will keep all of our stakeholders aware of our progress in attaining our outcomes and celebrating our milestones. It is our intention to ensure our community celebrates the achievement of our milestones; these celebrations are important, especially in the beginning of new projects that are not traditional in nature.

Cash flow and Project Milestones

We developed cash flow statements based on the budget and the project needs. Our expenditures are posted to specific periods that correspond with the actual project activities. Our revenue streams, at this time, only have two sources – Biigtigong Chief and Council (\$100,000 annually) and Infrastructure Canada (1 million annually). We propose an initial \$250,000 from Infrastructure Canada be released in July, another \$500,000 in December and the remaining \$250,000 in April. These release periods are supported by the identification of specific milestones.

Our cash flow projections indicate a few months where there is a negative net cash flow from operating activities. The negative cash flow resulting from the proposed cash release periods has been carefully examined in relation to the cash flow requirements of the entire organization. These numbers have been amalgamated into the organization's combined budget. Our Director of Finance and the Finance Committee make decisions regarding the cash needs of the organization. The negative net cash flow resulting from this project is not a problem in the bigger management of our cash flow requirements. As our milestones are identified by fiscal quarters, we are flexible in determining the actual cash release dates. However, we believe we can manage our affairs with the cash flow projections provided herein.

Monitoring and Controlling the Budget

All departments are required to regularly monitor actual activity to planned activity and control their expenditure to ensure that it is in line with available funds. If required, appropriate corrective action should be taken to resolve significant differences between actual and planned activity. Our finance policy and procedures outline the required steps to monitor and control the budget. The Program Lead will be responsible for the monitoring and controlling of the budget. Regular reporting to the SC Executive Board will ensure accountability, along with reporting to Chief and Council.

Measuring Performance and Outcomes

Budgeting supports the implementation and achievement of project outcomes and goals. Chapter 2 of our proposal outlines our approach to performance measurement. It is important that our outcomes are clearly stated and that the indicators accurately measure our outcomes. Clear communication and reporting systems between the SC Project Lead, the implementation teams and the Finance Department are important to the overall management of the program.

Community Engagement

We will adhere to the reporting requirements set out by Chief and Council and the Senior Management Team as per the policies of the First Nation. However, we are committed to enhance the level of engagement for this proposal and are implementing a new (but ancient) method of engagement – our traditional clan system. We are going to use this more intimate relationship based method to engage our membership. We will utilize this system to provide financial and performance information to our membership. Since this is a new initiative, we will be implementing systems to track, evaluate and adjust the process immediately, as part of its development process. We are trying to find creative approaches to providing our citizens the opportunities to increase their knowledge and become active players in building their families, community, Nation and the world.

Contributions

Our approach to amplifying the impact and reach of our Smart Cities proposal is ensuring there exists alignment with the overall vision and goals of the First Nation. Our strategy is not necessarily geared at leveraging revenues but rather developing and adjusting our programs to ensure long-term sustainability of our Smart Cities projects. The five year implementation period will allow us to develop resources, capacity and systems that will be integrated into the regular programs be provide.

Annual Funding:

\$100,000 is currently allocated to the language revitalization via a ten-year commitment made by Chief and Council. This funding will be directly transferred to the Smart Cities account to assist with the language efforts.

Program Support:

Departments within our organization have directed resources within their respective departments to support of the Smart Cities proposal. These resources will remain in the existing structure and management systems of the First Nation. However, they have been assigned to assist in the implementation of the Smart Cities proposal. We have a culture and the systems to support inter-departmental collaboration on shared vision, shared problems and shared approaches. These contributions amplify the impact and reach of our projects.

Department	Contribution	Purpose
Child & Family Learning Centre	1 FT Staff Position, salary and MERC	Language Revitalization
Child & Family Learning Centre	STEM based professional development for ECE teachers	STEM Implementation
Health & Social Services	Inter-generational trauma support and recovery services	Language Revitalization
Health & Social Services	Bilingual Health Promotions & Signage	Language Revitalization
Sustainable Development	Nishnaabe place-name reclamation project	Language Revitalization
Sustainable Development	Local Oral History Project	Aadsookaanan and language immersion stories
Sustainable Development	Supervision & management by the Economic Development Manager	High School reBOOT and CompTIA A+ Co-op program implementation
Sustainable Development	Summer Student Supervisor	High School summer student reBOOT and CompTIA A+ program
Sustainable Development	Summer Student Employment Positions for CompTIA A+ and reBOOT support	High School summer student reBOOT and CompTIA A+ program
Education	1 FT Staff Position, salary and MERC	Language Revitalization
Education	Education staff will be implementing the K-12 STEM and Nishnaabemwin Immersion	K-12 STEM Bilingual STEM video Nishnaabemwin Immersion
Education	Professional Development geared to support STEM, Blended Learning and Growth Mind Set	K-12 STEM Nishnaabemwin Immersion
Education	Coordination of Land-based learning activities & the Meet up program	Meet-up app Real-world connections
Education	Student program equipment & supplies	K-12 STEM
Education	Summer Student Coding Camp & Co-op Prerequisite delivery	K-12 STEM

All Departments	CompTIA & reBOOT co-op placement and summer student employment support	K-12 STEM
Other – Related Entities		
Pic River Development Corporation	\$20,000 Computer Donation to the school (possible annual donation) IT Support, cloud file transfer	K-12 STEM
Anishinabek Employment & Training	Summer Student Employment and Training Contribution - \$50,000 for 3 years. Access to other services via proposal	High School summer student reBOOT and CompTIA A+ program

Report on the use of the Finalist Grant

We identified a series of priority tasks that were required in order to further develop our final proposal. The finalist grant was used to complete these tasks. The following provides a summary of these tasks.

- 1. Develop an On-line Education Model:** Our team conducted extensive research on on-line education models. Based on our research and an examination of our student needs, consideration of our resources and review of our education philosophy, we determined that a Blended Learning Model was most appropriate for us. Blended learning is an approach to learning that combines face-to-face and online learning experiences. The combination of the in-person and online elements create a richer learning experience. We are not creating an on-line education model, but rather a hybrid model, that makes the best of on-line and the brick and mortar model.

We also examined various education pedagogies relating to on-line education. We adopted the Growth Mind Set Approach, a learning theory developed by Dr. Carol Dweck. It revolves around the belief that you can improve intelligence, ability and performance, as the mindset is malleable. Unlike a fixed mindset, where the belief is that they are either 'smart' or 'dumb', the Growth Mind Set advocates that abilities can be developed.

Additionally, we reviewed the Blended Learning approach to education and the Growth Mind Set philosophy in relation to our traditional Nishnaabe practices relating to learning. We believe that the three approaches can work collectively to provide the best learning experience for our children and families. Some initial training with our education staff was conducted and they were involved in the decision-making process regarding the approaches and methods of learning to be implemented in this project. The community was engaged in discussions and presentations on the Growth Mind Set and Blended Learning approaches to learning.

- 2. Research eLearning, eAcquisition and “Meet-Up” and open-source platforms:** Based on our identified needs and the consideration to make our project scale and replicable, we selected open edX, a learning management system. Our platform to house the eLearning, eAcquisition and the Meet Up forum, will be called BiigtiongX.
- 3. STEM Curriculum Development:** We employed our teaching staff and experts in the STEM field to design and develop K-12 STEM curriculum. Our current leads in our math and science programs conducted a mapping exercise, looking at how the on-line curriculum as presented by Khan Academy matches with the Ontario Provincial Curriculum. We developed a strategy on how to augment and enhance our current math and science programs with on-line resources.

After extensive research across many sectors, consideration of needs and the availability of resources, we determined a pathway to allow us to meet our needs. We identified the skills, knowledge and abilities we wanted to develop in our students and then determined the resources that we would employ to facilitate this learning. Our technology and engineering components of our proposal will utilize a variety of on-line resources with classroom teacher support; this is laid out in chapters 1 and 2. Assessment and evaluation processes to measure student success are included in the curriculum.

4. **Reconstruction of Core Aadsookaanan:** Much of the work during the finalist stage was identifying the risks associated with putting our aadsookaanan on-line and the potential disconnect from the real world. Time with our elders and knowledge holders helped develop a model that mitigates any potential risks and embraces the possibilities of cultural revitalization of our sacred stories in this modern time. Additionally, our initial research provided evidence that there exists a significant amount of primary research from the community that would facilitate legitimacy in our reconstruction work. A draft framework and work plan has been developed.
5. **Language Immersion Video Development:** Our immersion model is based on research and best practices in the creation of speakers. In addition to the research, we have been fortunate to witness this model being successful with an individual, who happens to be now working on our language revitalization plan. We spent time with potential immersion instructors providing them with the knowledge and tools to make immersion video. Our training produced three amazing WaaWaa Immersion Instructors. These immersion instructors produced a variety of videos, which were tested internally for understandability and for teaching purposes. We have a team of trained WaaWaa instructors who are ready to produce highly comprehensible immersion video.

We also showcased 4 videos at a community night to demonstrate our immersion video. We purposely selected videos that we thought would bring laughter to our audience; we wanted a roll out that brought laughter and hope. These videos were successful in demonstrating our product. The audiences that viewed our video reported that they understood the story and its meaning was successfully conveyed. This provided additional verification that our model will work; we still have to take a few moments to breathe, as we will be creating generations of understanders of our language, something that has not been done in centuries. It truly is empowering.

We spent some time looking at the world of animation, specifically 2-D animation. Utilizing this option comes with a huge learning curve; however, we want to continue exploring the option and determine its feasibility.

6. **Language Audio Overdubs on STEM Material:** Our consultations with our elders and individuals knowledgeable in STEM, has provided good direction in our efforts to produce bilingual STEM video. We discussed ways to integrate STEM, our Aadsookaanan, the meanings within our language and our traditional knowledge. This video will not be immersion video. However, the material will be accessible in English to be utilized by today's students. This video will also assist in helping raise the language proficiency of community's understanders and speakers of the language.
7. **Data Collection:** Considerable time was spent determining what data was actually needed to support the measurement of our outcomes. Our education system already has a process for the

collection, protection and distribution of student data. We will continue to protect the data of our children and have the school be the central entity for the student data.

- 8. Community Education and Engagement:** Engaging the community on this initiative was a wonderful community building experience. It was exciting and everyone was engaged, a bit fearful of change but willing to embrace change for the betterment of our children. Part of meaningful engagement is providing education and facilitating a learning experience. Our community members have a basic knowledge base of things like, second language acquisition, blended learning, growth mind set, programming languages, technology and engineering. With education comes meaningful engagement and support.

We conducted community wide and focus group surveys and lots of engagement activities. We had support during our application process but we have gained so much more than support during this phase. Our community, our staff and our leadership see the absolute importance of our proposal. We have real community buy-in; they are engaged partners.

- 9. Elder and Knowledge Carrier Protocols:** We respected the cultural protocols in place for our time with our elders and knowledge carriers. Teachings were shared regarding cultural protocols regarding the transfer of knowledge and the social environment in which these may occur. Discussions occurred over the impacts, both positive and negative, of the digital world and the transfer of our cultural knowledge. A solid relationship has been built with our elders and knowledge keepers. Their involvement remains critical to the success of our project.

- 10. Project Management Software and Collaboration Tools:** We utilized Slack for our collaboration work. Project management software was not looked into, as there already exists effective in-house systems of management.

- 11. Training/Travel:** We conducted a training needs assessment to determine the gaps regarding the delivery of the new services being proposed. Some initial training was provided to our classroom teaching staff, along with pilot projects that implemented the teaching of technology and engineering. Training was also provided to other staff members connected to the project implementation. We conducted immersion education training for our WaaWaa instructors. On-going training will be built into the proposal in order to build the capacity at the community level to ensure long-term sustainability.

- 12. Governance and Administration:** A staff member was assigned to coordinate the project. Governance and administrative systems to effectively and efficiently support the project are set up. We built upon the existing structures and policies of the First Nation while creating some innovative approaches to governance. Our clan system of governance will be used for engagement and consultation with the community. Some financial resources were spent on software, hardware and other supplies. Detailed financial analysis of the project was completed.

- 13. How-to-Manuals:** Our education staff will be documenting some best practices as a result of project implementation. The staff acknowledged their fears in teaching subject matters where they had limited knowledge and skills. In response to this fear, they decided to document their journey and provide encouragement and tips for others facing similar challenges.

Summary of Expenditures via Projects

Project	GL Accounts	Amount (Nearest \$100)
On-line education model	63900-136	9,300
eLearning, eAcquisition and Meet-Up Platform	61110-136	6,500
STEM Curriculum Development How-to-manuals	61000-136 69010-136 68500-136 68200-136	29,200
Aadsookaanan Reconstruction	61110-136	5,000
WaaWaa Immersion Video	61000-136 64410-136	5,300 12,000
Audio Overdubs on STEM Material	61110-136	10,700
Nishnaabemwin	63900-136	10,200
Data Collection	63900-136	
Community education and engagement Elder and Knowledge Carrier protocols	60900-136 61900-136 62300-136 60900-136	300 20,300 3,100
Collaboration Tools	62630-136 63700-136	700 100
Travel/Training	66350-136 66620-136 66630-136 66634-136 66700-136 67300-136 67400-136 67410-136 67430-136	37,200
Governance and Administration	69010-136	40,000
Supplies & Equipment	65400-136 64030-136 65450-136	2,500 3,300 900
Coordination & Development	61000-136 69010-136	20,000
Proposal	61000-136	10,000
Sub-total		226,600
Administration Fee	8%	20,000
Total		246,600

Financial Risks and Mitigation Strategies

Our approach to risk management is identified in Chapter 3. Risk management is an on-going task and is not something that happens at a particular time in the project's lifecycle. We have carefully examined a comprehensive list of risks throughout the development of this proposal. We have successfully mitigated and/or avoided some potentially significant risks. In our belief, this has led to a much better and more realistically implementable project. We continue to be aware of the likelihood and potential impacts of the risks in front of us. We will respond accordingly.

The biggest risk of all is the loss of Nishnaabemwin – not only from the hearts and spirit of our children, our families, our communities and Nations, but from the world. Once the Nishnaabe language is lost from here, it is lost forever. Immersion is the mitigating action towards the loss of Nishnaabemwin in Biigtigong. We have done considerable research in how to create speakers and immersion is our answer. We have also been fortunate to witness first hand the results of this method. We saw a young man, who was adopted out and never raised in his community, with his family, with his people, with his culture, his language, find his way home – researched and taught a first speaker how to pass on her language and today he is a fluent speaker of Nishnaabemwin. This is the method that we will use to make our video. It's amazing to think that our language can once again be passed on in our homes, our schools – actually, pretty much anywhere. It's just going to be done in another way because of the emergency state of our language.

Financial Risks and Mitigation Strategies			
Risk	Likelihood	Impact	Risk Management Approach/Mitigating Actions
Cost to make WaaWaa Immersion Video is too high	Medium	High	<ul style="list-style-type: none"> • Provide on-going training • On-going Immersion Instructor Recruitment • Establish work flow procedures and accountabilities • Set up a review & monitoring system • Establish best-practices • Provide stories and video content ideas • Provide employee support and encouragement
Nishnaabemwin audio overdub cost is too high	Medium	High	<ul style="list-style-type: none"> • Audio-video editing software & related training • Establish work flow procedures and accountabilities • Set up a review & monitoring system • Establish best-practices • Consider use of a first speaker as a consultant • Research animation and other technological options • Focus priorities and on core competencies
Extreme high cost of uploading and downloading video	High	High	<ul style="list-style-type: none"> • ISP (PRDC) is providing free on-site services to assist in the offloading, downloading and uploading of video
Expensive video backup system; cloud service unreliable for now	Medium	High	<ul style="list-style-type: none"> • Develop safe and reasonably costed manual backup system • ISP (PRDC) is setting up a free back up system on their servers
Loss of \$100,000 financial contribution from Chief & Council	Low	Medium	<ul style="list-style-type: none"> • Examine projects and make adjustments (cuts) where necessary • Ensure efficiency and effectiveness of projects • Provide and show value for the \$100,000 donation – produce results • Apply for other funding and financial contributions
Project variances – deficits/cost-over runs	Low	High	<ul style="list-style-type: none"> • Good financial planning (strategy, budgets, short and long term) • Measurable outcomes • Regular monitoring and reporting and adjustments • Follow Biigtigong's Finance Policy and Procedures (everything is addressed in detail) • Executive Board involvement
Delay on completion milestones dates	Low	Medium	<ul style="list-style-type: none"> • Good planning – measurable and attainable • Utilize project function options on accounting software • Sound management and supervision processes • Implement on-going evaluation and corrective measures process • Communication – Executive Board, Director of Finance
Cash Flow challenges	Low	Medium	<ul style="list-style-type: none"> • Good planning – measurable outcomes, milestones and results • Good management and supervision processes to meet outcomes • Provide accurate and timely information to Director of Finance • Ensure reporting requirements are followed • Follow Biigtigong's Finance Policies and Procedures
Partnerships are costly	Low	High	<ul style="list-style-type: none"> • Build internal capacity and take on responsibility at the community level • No long-term financial dependency on partners • Financially creative – no duplicate of services, efficiencies, mutually beneficial

			<ul style="list-style-type: none"> • Develop detailed agreements, if necessary
Low Student Participation	Medium	Medium	<ul style="list-style-type: none"> • Program is designed to be interactive and hands on approach • Meaningful outcomes • Onboarding and recruiting strategies • Incentives – i.e. Summer Student Employment • Community celebrations • Good co-op placements • Offer program neighboring First Nation • Develop on-line resources for scalable and replicable
Miscommunication between departments that are working on projects.	Low	Medium	<ul style="list-style-type: none"> • Written communication and protocols • Utilize real time collaboration tools • Regular meetings – with set agendas • Dispute resolution process • Clear roles and responsibilities
Inaccurate or incomplete project results due to the failure to identify and/or document specific project activities.	Low	Medium	<ul style="list-style-type: none"> • Clear performance measurements to be set • Determine indicators and measurement tools • Set deadlines and standards • Set up deadlines and activities inside of accounting software • Reporting standards • Performance standards for employees
Uneven workflow issues that decrease employee productivity	Low	High	<ul style="list-style-type: none"> • Accurate and thorough job analysis process • On-going monitoring and evaluation • Utilize iterative management approaches • Develop good relationships – open communication • Promote organizational culture

Operating Budgets and Cashflows

The five (5) Year Operating Budget and five (5) Year Cashflows are presented on the subsequent pages.

Biigtigong Nishnaabeg (Pic River First Nation), Ontario Budget Breakdown July 2019 - June 2020				
Item	Details/Notes	Annual Amount	Section Total	
Governance				
Executive Board				
	Honorarium		\$ 24,500.00	
Meetings - 10 Members - 10/year	5 Experts - 10 days @ \$750/day	\$ 7,500.00		
	2 Youth - 10 days @ \$200/day	\$ 2,000.00		
	2 in-person meetings			
	Travel	\$ 10,000.00		
	8 conferencing meetings			
Training	Board policies and procedures, planning for effective boards	\$ 5,000.00		
Aadsookaanan Team				
- 10 members	Honorarium		\$ 12,000.00	
Meetings - 6/year (bi-monthly)	10 members @ \$150/day for 6 meeting days/year	\$ 9,000.00		
Training	Oral tradition and storytelling	\$ 3,000.00		
Clan Engagement Team				
- 14 members representing 7 clans (2 reps/clan)	Honorarium		\$ 19,600.00	
Meetings - 6/year (bi-monthly)	14 members @ \$150/day for 6 meeting days/year	\$ 12,600.00		
Training/Engagement	Traditional Clan Teachings	\$ 7,000.00		
Staffing				
Proposal Lead (1/2 time)	Salary – \$45,000	\$ 51,750.00	\$ 109,250.00	
	MERCS – 15% = \$6,750			
Project Coordinator	Salary – \$50,000	\$ 57,500.00		
	MERCS – 15% = \$7,500			
Training/Travel		Open edX, Course Development	\$ 10,000.00	\$ 10,000.00
STEM Implementation				
SC Education Lead	Salary – \$80,000	\$ 92,000.00	\$ 281,500.00	
	MERCS – 15% = \$12,000			
CompTIA A+	Salary – \$80,000	\$ 92,000.00		
	MERCS – 15% = \$12,000			
Co-op & Business	Salary – \$50,000	\$ 57,500.00		
	MERCS – 15% = \$7,500			
reBOOT		\$ 30,000.00		
Training	reBOOT, CompTIA A+, Blended Learning	\$ 10,000.00		
Aadsookaanan Reconstruction				
Research	Primary and secondary data identification	\$ 80,000.00	\$ 85,000.00	
Training	Cultural Anthropology Data	\$ 5,000.00		
WaaWaa Immersion Video Production				
Immersion Lead	Salary – \$85,000	\$ 97,750.00		

Immersion Lead	MERCS – 15% = \$12,750	\$ 37,750.00	
WaaWaa Instructor	Salary – \$75,000	\$ 86,250.00	\$ 191,500.00
	MERCS – 15% = \$11,250		
Training	Immersion	\$ 4,500.00	
	Storytelling		
Program Supplies	Props	\$ 1,000.00	
	Digital	\$ 2,000.00	
Nishnaabemwin Production			
WaaWaa Audio Overdub		\$ 85,000.00	\$ 100,500.00
Bilingual STEM	Year 1	\$ 12,500.00	
· Year 1 \$12,500			
· Year 2 \$35,000			
· Year 3 \$45,000			
· Year 4 \$55,000			
· Year 5 \$55,000			
Training	Software	\$ 3,000.00	
Video Production Processing			
Video Support – compression/uploading	Salary - HS3/2 - \$40,360	\$ 46,414.00	\$ 50,914.00
	MERCS – 15% = \$6,054		
Video Editing	Year 1	\$ 4,500.00	
· Year 1 – 4,500			
· Year 2 – 15,750			
· Year 3 – 20,250			
· Year 4 – 24,750			
· Year 5 – 24,750			
Meet-Up Function			
Meet-Up Coordinator	Salary - HS3/2 - 40,360	\$ 46,414.00	\$ 49,914.00
	MERCS – 15% = 6,054		
Travel	Local travel	\$ 1,500.00	
Program Expenses	Engagement costs	\$ 2,000.00	
Technology			
BiigtigongX Administration	\$1,200/month @ 12 months	\$ 14,400.00	\$ 56,400.00
Appsembler	\$3,000/month @ 12 months	\$ 36,000.00	
Database Administration	\$500/month @ 12 months	\$ 6,000.00	
Engagement Strategy			
Within traditional territory	As per engagement plan	\$ 5,000.00	\$ 15,000.00
Off traditional territory	As per engagement plan	\$ 10,000.00	
Equipment			
Computers	10 @ 3,000/ computer	\$ 30,000.00	\$ 61,500.00
Tablets	Wacom Tablet 3 @ 500/tablet	\$ 1,500.00	
Software	Annual Fee	\$ 10,000.00	
Student - Costs	Robotics, books etc.	\$ 20,000.00	

Overall 2019/20 Budget Total \$ 1,067,578.00

Please note - source funding will be used to cover annual deficits

Biigtigong Nishnaabeg (Pic River First Nation), Ontario Budget Breakdown July 2020 - June 2021			
Item	Details/Notes	Annual Amount	Section Total
Governance			
Executive Board	Honorarium		\$ 24,500.00
Meetings - 10 Members - 10/year	5 Experts - 10 days @ \$750/day	\$ 7,500.00	
	2 Youth - 10 days @ \$200/day	\$ 2,000.00	
	2 in-person meetings		
	Travel	\$ 10,000.00	
	8 conferencing meetings		
Training	Board polcies and procedures, planning for effective boards	\$ 5,000.00	
Aadsookaanan Team			
- 10 members	Honorarium		\$ 12,000.00
Meetings - 6/year (bi-monthly)	10 members @ \$150/day for 6 meeting days/year	\$ 9,000.00	
Training	Oral tradition and storytelling	\$ 3,000.00	
Clan Engagement Team			
- 14 members representing 7 clans (2 reps/clan)	Honorarium		\$ 19,600.00
Meetings - 6/year (bi-monthly)	14 members @ \$150/day for 6 meeting days/year	\$ 12,600.00	
Training/Engagement	Traditional Clan Teachings	\$ 7,000.00	
Staffing			
Proposal Lead (1/2 time)	Salary – \$45,900	\$ 52,785.00	\$ 111,435.00
	MERCS – 15% = \$6,885		
Project Coordinator	Salary – \$51,000	\$ 58,650.00	
	MERCS – 15% = \$7,650		
Training/Travel	Open edX, Course Development	\$ 10,000.00	\$ 10,000.00
STEM Implementation			
SC Education Lead	Salary – \$81,600	\$ 93,840.00	\$ 286,330.00
	MERCS – 15% = \$12,240		
CompTIA A+	Salary – \$81,600	\$ 93,840.00	
	MERCS – 15% = \$12,240		
Co-op & Business	Salary – \$51,000	\$ 58,650.00	
	MERCS – 15% = \$7,650		
reBOOT		\$ 30,000.00	
Training	reBOOT, CompTIA A+, Blended Learning	\$ 10,000.00	
Aadsookaanan Reconstruction			
Research	Data Analysis & Reconstruction	\$ 80,000.00	\$ 85,000.00
Training	Cultural Anthropology Data	\$ 5,000.00	
WaaWaa Immersion Video Production			
Immersion Lead	Salary – \$86,700	\$ 99,705.00	
	MERCS – 15% = \$13,005		

WaaWaa Instructor	Salary – \$76,500	\$ 87,975.00	\$ 195,180.00
	MERCS – 15% = \$11,475		
Training	Immersion	\$ 4,500.00	
	Storytelling		
Program Supplies	Props	\$ 1,000.00	
	Digital	\$ 2,000.00	

Nishnaabemwin Production			
WaaWaa Audio Overdub		\$ 85,000.00	\$ 123,000.00
Bilingual STEM	Year 2		
· Year 1 \$12,500			
· Year 2 \$35,000			
· Year 3 \$45,000		\$ 35,000.00	
· Year 4 \$55,000			
· Year 5 \$55,000			
Training	Software	\$ 3,000.00	

Video Production Processing			
Video Support – compression/uploading	Salary - HS3/2 - \$41,167	\$ 47,342.00	\$ 63,092.00
	MERCS – 15% = \$6,175		
Video Editing	Year 2		
· Year 1 – 4,500			
· Year 2 – 15,750		\$ 15,750.00	
· Year 3 – 20,250			
· Year 4 – 24,750			
· Year 5 – 24,750			

Meet-Up Function			
Meet-Up Coordinator	Salary - HS3/2 - \$41,167	\$ 47,342.00	\$ 50,842.00
	MERCS – 15% = \$6,175		
Travel	Local travel	\$ 1,500.00	
Program Expenses	Engagement costs	\$ 2,000.00	

Technology			
BiigtigongX Administration	\$1,200/month @ 12 months	\$ 14,400.00	\$ 56,400.00
Appsembler	\$3,000/month @ 12 months	\$ 36,000.00	
Database Administration	\$500/month @ 12 months	\$ 6,000.00	

Engagement Strategy			
Within traditional territory	As per engagement plan	\$ 5,000.00	\$ 15,000.00
Off traditional territory	As per engagement plan	\$ 10,000.00	

Equipment			
Software	Annual Fee	\$ 10,000.00	\$ 30,000.00
Student - Costs	Robotics, books etc.	\$ 20,000.00	

Overall 2020/21 Budget Total \$ 1,082,379.00

Please note - source funding will be used to cover annual deficits

Biigtigong Nishnaabeg (Pic River First Nation), Ontario Budget Breakdown July 2021 - June 2022			
Item	Details/Notes	Annual Amount	Section Total
Governance			
Executive Board	Honorarium		\$ 24,500.00
Meetings - 10 Members - 10/year	5 Experts - 10 days @ \$750/day	\$ 7,500.00	
	2 Youth - 10 days @ \$200/day	\$ 2,000.00	
	2 in-person meetings		
	Travel	\$ 10,000.00	
	8 conferencing meetings		
Training	Board policies and procedures, planning for effective boards	\$ 5,000.00	
Aadsookaanan Team			
- 10 members	Honorarium		\$ 12,000.00
Meetings - 6/year (bi-monthly)	10 members @ \$150/day for 6 meeting days/year	\$ 9,000.00	
Training	Oral tradition and storytelling	\$ 3,000.00	
Clan Engagement Team			
- 14 members representing 7 clans (2 reps/clan)	Honorarium		\$ 19,600.00
Meetings - 6/year (bi-monthly)	14 members @ \$150/day for 6 meeting days/year	\$ 12,600.00	
Training/Engagement	Traditional Clan Teachings	\$ 7,000.00	
Staffing			
Proposal Lead (1/2 time)	Salary – \$46,818	\$ 53,841.00	\$ 113,664.00
	MERCS – 15% = \$7,023		
Project Coordinator	Salary – \$52,020	\$ 59,823.00	
	MERCS – 15% = \$7,803		
Training/Travel	Open edX, Course Development	\$ 10,000.00	\$ 10,000.00
STEM Implementation			
SC Education Lead	Salary – \$83,232	\$ 95,717.00	\$ 291,257.00
	MERCS – 15% = \$12,485		
CompTIA A+	Salary – \$83,232	\$ 95,717.00	
	MERCS – 15% = \$12,485		
Co-op & Business	Salary – \$52,020	\$ 59,823.00	
	MERCS – 15% = \$7,803		
reBOOT		\$ 30,000.00	
Training	reBOOT, CompTIA A+, Blended Learning	\$ 10,000.00	
Aadsookaanan Reconstruction			
Research	Data Analysis & Reconstruction	\$ 72,500.00	\$ 77,500.00
Training	Cultural Anthropology Data	\$ 5,000.00	
WaaWaa Immersion Video Production			
Immersion Lead	Salary – \$88,434	\$ 101,699.00	

Immersion Lead	MERCS – 15% = \$13,265	\$ 101,099.00	
WaaWaa Instructor	Salary – \$78,030	\$ 89,735.00	
	MERCS – 15% = \$11,705		
Training	Immersion	\$ 4,500.00	
	Storytelling		
Program Supplies	Props	\$ 1,000.00	
	Digital	\$ 2,000.00	
Nishnaabemwin Production			
WaaWaa Audio Overdub		\$ 85,000.00	
Bilingual STEM			
· Year 1 \$12,500			
· Year 2 \$35,000			
· Year 3 \$45,000	Year 3	\$ 45,000.00	\$ 133,000.00
· Year 4 \$55,000			
· Year 5 \$55,000			
Training	Software	\$ 3,000.00	
Video Production Processing			
Video Support – compression/uploading	Salary - HS3/2 - \$41,990	\$ 48,289.00	
	MERCS – 15% = \$6,299		
Video Editing			
· Year 1 – 4,500			
· Year 2 – 15,750			
· Year 3 – 20,250	Year 3	\$ 20,250.00	\$ 68,539.00
· Year 4 – 24,750			
· Year 5 – 24,750			
Meet-Up Function			
Meet-Up Coordinator	Salary - HS3/2 - \$41,990	\$ 48,289.00	
	MERCS – 15% = \$6,299		
Travel	Local travel	\$ 1,500.00	\$ 51,789.00
Program Expenses	Engagement costs	\$ 2,000.00	
Technology			
BiigtigongX Administration	\$1,200/month @ 12 months	\$ 14,400.00	
Appsembler	\$3,000/month @ 12 months	\$ 36,000.00	\$ 56,400.00
Database Administration	\$500/month @ 12 months	\$ 6,000.00	
Engagement Strategy			
Within traditional territory	As per engagement plan	\$ 5,000.00	\$ 15,000.00
Off traditional territory	As per engagement plan	\$ 10,000.00	
Equipment			
Software	Annual Fee	\$ 10,000.00	\$ 30,000.00
Student - Costs	Robotics, books etc.	\$ 20,000.00	

Overall 2021/22 Budget Total \$ 1,102,183.00

Please note - source funding will be used to cover annual deficits

Biigtigong Nishnaabeg (Pic River First Nation), Ontario Budget Breakdown July 2022 - June 2023			
Item	Details/Notes	Annual Amount	Section Total
Governance			
Executive Board	Honorarium		\$ 24,500.00
Meetings - 10 Members - 10/year	5 Experts - 10 days @ \$750/day	\$ 7,500.00	
	2 Youth - 10 days @ \$200/day	\$ 2,000.00	
	2 in-person meetings		
	Travel	\$ 10,000.00	
	8 conferencing meetings		
Training	Board polcies and procedures, planning for effective boards	\$ 5,000.00	
Aadsookaanan Team			
- 10 members	Honorarium		\$ 12,000.00
Meetings - 6/year (bi-monthly)	10 members @ \$150/day for 6 meeting days/year	\$ 9,000.00	
Training	Oral tradition and storytelling	\$ 3,000.00	
Clan Engagement Team			
- 14 members representing 7 clans (2 reps/clan)	Honorarium		\$ 16,600.00
Meetings - 6/year (bi-monthly)	14 members @ \$150/day for 6 meeting days/year	\$ 12,600.00	
Training/Engagement	Traditional Clan Teachings	\$ 4,000.00	
Staffing			
Proposal Lead (1/2 time)	Salary – \$47,755	\$ 54,918.00	\$ 115,938.00
	MERCS – 15% = \$7,163		
Project Coordinator	Salary – \$53,061	\$ 61,020.00	
	MERCS – 15% = \$7,959		
Training/Travel	Open edX, Course Development	\$ 10,000.00	\$ 10,000.00
STEM Implementation			
SC Education Lead	Salary – \$84,897	\$ 97,632.00	\$ 296,284.00
	MERCS – 15% = \$12,735		
CompTIA A+	Salary – \$84,897	\$ 97,632.00	
	MERCS – 15% = \$12,735		
Co-op & Business	Salary – \$53,061	\$ 61,020.00	
	MERCS – 15% = \$7,959		
reBOOT		\$ 30,000.00	
Training	reBOOT, CompTIA A+, Blended Learning	\$ 10,000.00	
Aadsookaanan Reconstruction			
Research	Social Systems	\$ 50,000.00	\$ 55,000.00
Training	Cultural Anthropology Data	\$ 5,000.00	
WaaWaa Immersion Video Production			
Immersion Lead	Salary – \$90,203	\$ 103,733.00	
	MERCS – 15% = \$13,530		

WaaWaa Instructor	Salary – \$79,591	\$ 91,530.00	\$ 202,763.00
	MERCS – 15% = \$11,939		
Training	Immersion	\$ 4,500.00	
	Storytelling		
Program Supplies	Props	\$ 1,000.00	
	Digital	\$ 2,000.00	

Nishnaabemwin Production

WaaWaa Audio Overdub		\$ 85,000.00	\$ 143,000.00
Bilingual STEM	Year 4		
· Year 1 \$12,500			
· Year 2 \$35,000			
· Year 3 \$45,000			
· Year 4 \$55,000		\$ 55,000.00	
· Year 5 \$55,000			
Training	Software	\$ 3,000.00	

Video Production Processing

Video Support – compression/uploading	Salary - HS3/2 - \$42,830	\$ 49,255.00	\$ 74,005.00
	MERCS – 15% = \$6,425		
Video Editing	Year 4		
· Year 1 – 4,500			
· Year 2 – 15,750			
· Year 3 – 20,250		\$ 24,750.00	
· Year 4 – 24,750			
· Year 5 – 24,750			

Meet-Up Function

Meet-Up Coordinator	Salary - HS3/2 - \$42,830	\$ 49,255.00	\$ 52,755.00
	MERCS – 15% = \$6,425		
Travel	Local travel	\$ 1,500.00	
Program Expenses	Engagement costs	\$ 2,000.00	

Technology

BiigtigongX Administration	\$1,200/month @ 12 months	\$ 14,400.00	\$ 56,400.00
Appsembler	\$3,000/month @ 12 months	\$ 36,000.00	
Database Administration	\$500/month @ 12 months	\$ 6,000.00	

Engagement Strategy

Within traditional territory	As per engagement plan	\$ 5,000.00	\$ 15,000.00
Off traditional territory	As per engagement plan	\$ 10,000.00	

Equipment

Software	Annual Fee	\$ 10,000.00	\$ 30,000.00
Student - Costs	Robotics, books etc.	\$ 20,000.00	

Overall 2022/23 Budget Total \$ 1,104,245.00

Please note - source funding will be used to cover annual deficits

Biigtigong Nishnaabeg (Pic River First Nation), Ontario Budget Breakdown July 2023 - June 2024			
Item	Details/Notes	Annual Amount	Section Total
Governance			
<u>Executive Board</u>	Honorarium		\$ 24,500.00
Meetings - 10 Members - 10/year	5 Experts - 10 days @ \$750/day	\$ 7,500.00	
	2 Youth - 10 days @ \$200/day	\$ 2,000.00	
	2 in-person meetings		
	Travel	\$ 10,000.00	
	8 conferencing meetings		
Training	Board polcies and procedures, planning for effective boards	\$ 5,000.00	
<u>Aadsookaanan Team</u>			
- 10 members	Honorarium		\$ 9,000.00
Meetings - 6/year (bi-monthly)	10 members @ \$150/day for 6 meeting days/year	\$ 9,000.00	
<u>Clan Engagement Team</u>			
- 14 members representing 7 clans (2 reps/clan)	Honorarium		\$ 14,600.00
Meetings - 6/year (bi-monthly)	14 members @ \$150/day for 6 meeting days/year	\$ 12,600.00	
Training/Engagement	Traditional Clan Teachings	\$ 2,000.00	
<u>Staffing</u>			
Proposal Lead (1/2 time)	Salary – \$48,710	\$ 56,017.00	\$ 118,258.00
	MERCS – 15% = \$7,307		
Project Coordinator	Salary – \$54,123	\$ 62,241.00	
	MERCS – 15% = \$8,118		
<u>Training/Travel</u>	Open edX, Course Development	\$ 10,000.00	\$ 10,000.00
STEM Implementation			
SC Education Lead	Salary – \$86,595	\$ 99,584.00	\$ 294,409.00
	MERCS – 15% = \$12,989		
CompTIA A+	Salary – \$86,595	\$ 99,584.00	
	MERCS – 15% = \$12,989		
Co-op & Business	Salary – \$54,123	\$ 62,241.00	
	MERCS – 15% = \$8,118		
reBOOT		\$ 30,000.00	
Training	reBOOT, CompTIA A+, Blended Learning	\$ 3,000.00	
Aadsookaanan Reconstruction			
Research	Social Systems	\$ 50,000.00	\$ 55,000.00
Training	Cultural Anthropology Data	\$ 5,000.00	
WaaWaa Immersion Video Production			
Immersion Lead	Salary – \$92,007	\$ 105,808.00	
	MERCS – 15% = \$13,801		

WaaWaa Instructor	Salary – \$81,183	\$ 93,360.00	\$ 202,168.00
	MERCS – 15% = \$12,177		
Program Supplies	Props	\$ 1,000.00	
	Digital	\$ 2,000.00	

Nishnaabemwin Production			
WaaWaa Audio Overdub		\$ 85,000.00	\$ 143,000.00
Bilingual STEM	Year 5		
· Year 1 \$12,500			
· Year 2 \$35,000			
· Year 3 \$45,000			
· Year 4 \$55,000			
· Year 5 \$55,000		\$ 55,000.00	
Training	Software	\$ 3,000.00	

Video Production Processing			
Video Support – compression/uploading	Salary - HS3/2 - \$43,687	\$ 50,240.00	\$ 74,990.00
	MERCS – 15% = \$6,553		
Video Editing	Year 5		
· Year 1 – 4,500			
· Year 2 – 15,750			
· Year 3 – 20,250			
· Year 4 – 24,750		\$ 24,750.00	
· Year 5 – 24,750			

Meet-Up Function			
Meet-Up Coordinator	Salary - HS3/2 - \$43,687	\$ 50,240.00	\$ 53,740.00
	MERCS – 15% = \$6,553		
Travel	Local travel	\$ 1,500.00	
Program Expenses	Engagement costs	\$ 2,000.00	

Technology			
BiigtigongX Administration	\$1,200/month @ 12 months	\$ 14,400.00	\$ 56,400.00
Appsembler	\$3,000/month @ 12 months	\$ 36,000.00	
Database Administration	\$500/month @ 12 months	\$ 6,000.00	

Engagement Strategy			
Within traditional territory	As per engagement plan	\$ 5,000.00	\$ 15,000.00
Off traditional territory	As per engagement plan	\$ 10,000.00	

Equipment			
Software	Annual Fee	\$ 10,000.00	\$ 30,000.00
Student - Costs	Robotics, books etc.	\$ 20,000.00	

Overall 2023/24 Budget Total \$ 1,101,065.00

Please note - source funding will be used to cover annual deficits

Total Budget Over 5 Years (2019-2024) \$ 5,457,450.00

5 Year Cash Flow Statements

(>>>>>>Insert Cash Flow Statements HERE<<<<<<)

Biigtigong Nishnaabeg (Pic River First Nation), Ontario
Monthly Cash Flow Statement Year 1: July 2019 - June 2020

	<u>Total</u>	<u>July</u>	<u>Aug</u>	<u>Sept</u>	<u>Oct</u>	<u>Nov</u>	<u>Dec</u>	<u>Jan</u>	<u>Feb</u>	<u>Mar</u>	<u>Apr</u>	<u>May</u>	<u>June</u>
Cash Inflows:													
Infrastructure Canada	\$1,000,000.00	\$250,000.00	\$0.00	\$0.00	\$0.00	\$0.00	\$500,000.00	\$0.00	\$0.00	\$0.00	\$250,000.00	\$0.00	\$0.00
Biigtigong Source Funding	\$67,578.00	\$5,631.50	\$5,631.50	\$5,631.50	\$5,631.50	\$5,631.50	\$5,631.50	\$5,631.50	\$5,631.50	\$5,631.50	\$5,631.50	\$5,631.50	\$5,631.50
Total Cash Inflows	\$1,067,578.00	\$255,631.50	\$5,631.50	\$5,631.50	\$5,631.50	\$5,631.50	\$505,631.50	\$5,631.50	\$5,631.50	\$5,631.50	\$255,631.50	\$5,631.50	\$5,631.50
Cash Outflows:													
Governance													
Executive Board													
Meetings													
Expert Honorarium	\$7,500.00	\$0.00	\$750.00	\$750.00	\$750.00	\$750.00	\$0.00	\$750.00	\$750.00	\$750.00	\$750.00	\$750.00	\$750.00
Youth Honorarium	\$2,000.00	\$0.00	\$200.00	\$200.00	\$200.00	\$200.00	\$0.00	\$200.00	\$200.00	\$200.00	\$200.00	\$200.00	\$200.00
Travel	\$10,000.00	\$0.00	\$1,000.00	\$1,000.00	\$1,000.00	\$1,000.00	\$0.00	\$1,000.00	\$1,000.00	\$1,000.00	\$1,000.00	\$1,000.00	\$1,000.00
Training	\$5,000.00	\$0.00	\$0.00	\$1,666.67	\$0.00	\$0.00	\$0.00	\$1,666.67	\$0.00	\$0.00	\$1,666.67	\$0.00	\$0.00
Aadsookaanan Team													
Meetings													
- Honorarium	\$9,000.00	\$0.00	\$1,500.00	\$0.00	\$1,500.00	\$0.00	\$1,500.00	\$0.00	\$1,500.00	\$0.00	\$1,500.00	\$0.00	\$1,500.00
Training	\$3,000.00	\$0.00	\$0.00	\$0.00	\$1,000.00	\$0.00	\$1,000.00	\$0.00	\$1,000.00	\$0.00	\$0.00	\$0.00	\$0.00
Clan Engagement Team													
Meetings													
- Honorarium	\$12,600.00	\$0.00	\$2,100.00	\$0.00	\$2,100.00	\$0.00	\$2,100.00	\$0.00	\$2,100.00	\$0.00	\$2,100.00	\$0.00	\$2,100.00
Training/Engagement	\$7,000.00	\$0.00	\$0.00	\$0.00	\$2,333.33	\$0.00	\$2,333.33	\$0.00	\$2,333.33	\$0.00	\$0.00	\$0.00	\$0.00
Staffing													
- Proposal Lead	\$51,750.00	\$4,312.50	\$4,312.50	\$4,312.50	\$4,312.50	\$4,312.50	\$4,312.50	\$4,312.50	\$4,312.50	\$4,312.50	\$4,312.50	\$4,312.50	\$4,312.50
- Project Coordinator	\$57,500.00	\$4,791.67	\$4,791.67	\$4,791.67	\$4,791.67	\$4,791.67	\$4,791.67	\$4,791.67	\$4,791.67	\$4,791.67	\$4,791.67	\$4,791.67	\$4,791.67
Training/Travel													
STEM Implementation													
SC Education Lead	\$92,000.00	\$7,666.67	\$7,666.67	\$7,666.67	\$7,666.67	\$7,666.67	\$7,666.67	\$7,666.67	\$7,666.67	\$7,666.67	\$7,666.67	\$7,666.67	\$7,666.67
CompTIA A+	\$92,000.00	\$7,666.67	\$7,666.67	\$7,666.67	\$7,666.67	\$7,666.67	\$7,666.67	\$7,666.67	\$7,666.67	\$7,666.67	\$7,666.67	\$7,666.67	\$7,666.67
Co-op & Business	\$57,500.00	\$4,791.67	\$4,791.67	\$4,791.67	\$4,791.67	\$4,791.67	\$4,791.67	\$4,791.67	\$4,791.67	\$4,791.67	\$4,791.67	\$4,791.67	\$4,791.67
reBOOT	\$30,000.00	\$2,500.00	\$2,500.00	\$2,500.00	\$2,500.00	\$2,500.00	\$2,500.00	\$2,500.00	\$2,500.00	\$2,500.00	\$2,500.00	\$2,500.00	\$2,500.00
Training	\$10,000.00	\$0.00	\$3,333.33	\$0.00	\$0.00	\$3,333.33	\$0.00	\$0.00	\$0.00	\$3,333.33	\$0.00	\$0.00	\$0.00
Aadsookaanan Reconstruction													
Research	\$80,000.00	\$6,666.67	\$6,666.67	\$6,666.67	\$6,666.67	\$6,666.67	\$6,666.67	\$6,666.67	\$6,666.67	\$6,666.67	\$6,666.67	\$6,666.67	\$6,666.67
Training	\$5,000.00	\$0.00	\$0.00	\$2,500.00	\$0.00	\$0.00	\$0.00	\$2,500.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00
WaaWaa Immersion Video Production													
Immersion Lead	\$97,750.00	\$8,145.83	\$8,145.83	\$8,145.83	\$8,145.83	\$8,145.83	\$8,145.83	\$8,145.83	\$8,145.83	\$8,145.83	\$8,145.83	\$8,145.83	\$8,145.83
WaaWaa Instructor	\$86,250.00	\$7,187.50	\$7,187.50	\$7,187.50	\$7,187.50	\$7,187.50	\$7,187.50	\$7,187.50	\$7,187.50	\$7,187.50	\$7,187.50	\$7,187.50	\$7,187.50
Training	\$4,500.00	\$0.00	\$1,500.00	\$0.00	\$0.00	\$1,500.00	\$0.00	\$0.00	\$0.00	\$1,500.00	\$0.00	\$0.00	\$0.00
Program Supplies	\$3,000.00	\$250.00	\$250.00	\$250.00	\$250.00	\$250.00	\$250.00	\$250.00	\$250.00	\$250.00	\$250.00	\$250.00	\$250.00
Nishnaabemwin Production													
WaaWaa Audio Overdub	\$85,000.00	\$7,083.33	\$7,083.33	\$7,083.33	\$7,083.33	\$7,083.33	\$7,083.33	\$7,083.33	\$7,083.33	\$7,083.33	\$7,083.33	\$7,083.33	\$7,083.33
Bilingual STEM Year 1	\$12,500.00	\$1,041.67	\$1,041.67	\$1,041.67	\$1,041.67	\$1,041.67	\$1,041.67	\$1,041.67	\$1,041.67	\$1,041.67	\$1,041.67	\$1,041.67	\$1,041.67
Training	\$3,000.00	\$0.00	\$0.00	\$1,500.00	\$0.00	\$0.00	\$0.00	\$1,500.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00
Video Production Processing													
Video Support – compression/uploading	\$46,414.00	\$3,867.83	\$3,867.83	\$3,867.83	\$3,867.83	\$3,867.83	\$3,867.83	\$3,867.83	\$3,867.83	\$3,867.83	\$3,867.83	\$3,867.83	\$3,867.83

Monthly Cash Flow Year 1

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Biigtigong Nishnaabeg - Smart Cities Final Proposal

Video Editing Year 1	\$4,500.00	\$0.00	\$0.00	\$1,500.00	\$0.00	\$0.00	\$1,500.00	\$0.00	\$0.00	\$1,500.00	\$0.00	\$0.00	\$0.00
Meet-Up Function													
Meet-Up Coordinator	\$46,414.00	\$3,867.83	\$3,867.83	\$3,867.83	\$3,867.83	\$3,867.83	\$3,867.83	\$3,867.83	\$3,867.83	\$3,867.83	\$3,867.83	\$3,867.83	\$3,867.83
Travel	\$1,500.00	\$125.00	\$125.00	\$125.00	\$125.00	\$125.00	\$125.00	\$125.00	\$125.00	\$125.00	\$125.00	\$125.00	\$125.00
Program Expenses	\$2,000.00	\$166.67	\$166.67	\$166.67	\$166.67	\$166.67	\$166.67	\$166.67	\$166.67	\$166.67	\$166.67	\$166.67	\$166.67
Technology													
BiigtigongX Administration	\$14,400.00	\$1,200.00	\$1,200.00	\$1,200.00	\$1,200.00	\$1,200.00	\$1,200.00	\$1,200.00	\$1,200.00	\$1,200.00	\$1,200.00	\$1,200.00	\$1,200.00
Appsembler	\$36,000.00	\$3,000.00	\$3,000.00	\$3,000.00	\$3,000.00	\$3,000.00	\$3,000.00	\$3,000.00	\$3,000.00	\$3,000.00	\$3,000.00	\$3,000.00	\$3,000.00
Database Administration	\$6,000.00	\$500.00	\$500.00	\$500.00	\$500.00	\$500.00	\$500.00	\$500.00	\$500.00	\$500.00	\$500.00	\$500.00	\$500.00
Engagement Strategy													
Within traditional territory	\$5,000.00	\$416.67	\$416.67	\$416.67	\$416.67	\$416.67	\$416.67	\$416.67	\$416.67	\$416.67	\$416.67	\$416.67	\$416.67
Off traditional territory	\$10,000.00	\$833.33	\$833.33	\$833.33	\$833.33	\$833.33	\$833.33	\$833.33	\$833.33	\$833.33	\$833.33	\$833.33	\$833.33
Equipment													
Computers	\$30,000.00	\$0.00	\$30,000.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00
Tablets	\$1,500.00	\$0.00	\$1,500.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00
Software	\$10,000.00	\$10,000.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00
Student - Costs	\$20,000.00	\$1,666.67	\$1,666.67	\$1,666.67	\$1,666.67	\$1,666.67	\$1,666.67	\$1,666.67	\$1,666.67	\$1,666.67	\$1,666.67	\$1,666.67	\$1,666.67
Total Cash Outflows	\$1,067,578.00	\$87,748.17	\$121,298.17	\$86,864.83	\$88,298.17	\$84,531.50	\$87,848.17	\$85,364.83	\$88,298.17	\$86,031.50	\$86,631.50	\$79,698.17	\$84,964.83
Increase/Decrease in Cash	\$167,883.33	-\$115,666.67	-\$81,233.33	-\$82,666.67	-\$78,900.00	\$417,783.33	-\$79,733.33	-\$82,666.67	-\$80,400.00	\$169,000.00	-\$74,066.67	-\$79,333.33	
Beginning Cash Balance	\$0.00	\$167,883.33	\$52,216.67	-\$29,016.67	-\$111,683.33	-\$190,583.33	\$227,200.00	\$147,466.67	\$64,800.00	-\$15,600.00	\$153,400.00	\$79,333.33	
Closing Cash Balance	<u>\$167,883.33</u>	<u>\$52,216.67</u>	<u>-\$29,016.67</u>	<u>-\$111,683.33</u>	<u>-\$190,583.33</u>	<u>\$227,200.00</u>	<u>\$147,466.67</u>	<u>\$64,800.00</u>	<u>-\$15,600.00</u>	<u>\$153,400.00</u>	<u>\$79,333.33</u>	<u>0.00</u>	

Biigtigong Nishnaabeg (Pic River First Nation), Ontario
Monthly Cash Flow Statement Year 2: July 2020 - June 2021

	<u>Total</u>	<u>July</u>	<u>Aug</u>	<u>Sept</u>	<u>Oct</u>	<u>Nov</u>	<u>Dec</u>	<u>Jan</u>	<u>Feb</u>	<u>Mar</u>	<u>Apr</u>	<u>May</u>	<u>June</u>
Cash Inflows:													
Infrastructure Canada	\$1,000,000.00	\$250,000.00	\$0.00	\$0.00	\$0.00	\$0.00	\$500,000.00	\$0.00	\$0.00	\$0.00	\$250,000.00	\$0.00	\$0.00
Biigtigong Source Funding	\$82,379.00	\$6,864.92	\$6,864.92	\$6,864.92	\$6,864.92	\$6,864.92	\$6,864.92	\$6,864.92	\$6,864.92	\$6,864.92	\$6,864.92	\$6,864.92	\$6,864.92
Total Cash Inflows	\$1,082,379.00	\$256,864.92	\$6,864.92	\$6,864.92	\$6,864.92	\$6,864.92	\$506,864.92	\$6,864.92	\$6,864.92	\$6,864.92	\$256,864.92	\$6,864.92	\$6,864.92
Cash Outflows:													
Governance													
<u>Executive Board</u>													
Meetings													
Expert Honorarium	\$ 7,500.00	\$0.00	\$750.00	\$750.00	\$750.00	\$750.00	\$0.00	\$750.00	\$750.00	\$750.00	\$750.00	\$750.00	\$750.00
Youth Honorarium	\$ 2,000.00	\$0.00	\$200.00	\$200.00	\$200.00	\$200.00	\$0.00	\$200.00	\$200.00	\$200.00	\$200.00	\$200.00	\$200.00
Travel	\$ 10,000.00	\$0.00	\$1,000.00	\$1,000.00	\$1,000.00	\$1,000.00	\$0.00	\$1,000.00	\$1,000.00	\$1,000.00	\$1,000.00	\$1,000.00	\$1,000.00
Training	\$ 5,000.00	\$0.00	\$0.00	\$1,666.67	\$0.00	\$0.00	\$0.00	\$1,666.67	\$0.00	\$0.00	\$1,666.67	\$0.00	\$0.00
<u>Aadsookaanan Team</u>													
Meetings													
- Honorarium	\$ 9,000.00	\$0.00	\$1,500.00	\$0.00	\$1,500.00	\$0.00	\$1,500.00	\$0.00	\$1,500.00	\$0.00	\$1,500.00	\$0.00	\$1,500.00
Training	\$ 3,000.00	\$0.00	\$0.00	\$0.00	\$1,000.00	\$0.00	\$1,000.00	\$0.00	\$1,000.00	\$0.00	\$0.00	\$0.00	\$0.00
<u>Clan Engagement Team</u>													
Meetings													
- Honorarium	\$ 12,600.00	\$0.00	\$2,100.00	\$0.00	\$2,100.00	\$0.00	\$2,100.00	\$0.00	\$2,100.00	\$0.00	\$2,100.00	\$0.00	\$2,100.00
Training/Engagement	\$ 7,000.00	\$0.00	\$0.00	\$0.00	\$2,333.33	\$0.00	\$2,333.33	\$0.00	\$2,333.33	\$0.00	\$0.00	\$0.00	\$0.00
<u>Staffing</u>													
- Proposal Lead	\$ 52,785.00	\$4,398.75	\$4,398.75	\$4,398.75	\$4,398.75	\$4,398.75	\$4,398.75	\$4,398.75	\$4,398.75	\$4,398.75	\$4,398.75	\$4,398.75	\$4,398.75
- Project Coordinator	\$ 58,650.00	\$4,887.50	\$4,887.50	\$4,887.50	\$4,887.50	\$4,887.50	\$4,887.50	\$4,887.50	\$4,887.50	\$4,887.50	\$4,887.50	\$4,887.50	\$4,887.50
<u>Training/Travel</u>													
STEM Implementation													
SC Education Lead	\$ 93,840.00	\$7,820.00	\$7,820.00	\$7,820.00	\$7,820.00	\$7,820.00	\$7,820.00	\$7,820.00	\$7,820.00	\$7,820.00	\$7,820.00	\$7,820.00	\$7,820.00
CompTIA A+	\$ 93,840.00	\$7,820.00	\$7,820.00	\$7,820.00	\$7,820.00	\$7,820.00	\$7,820.00	\$7,820.00	\$7,820.00	\$7,820.00	\$7,820.00	\$7,820.00	\$7,820.00
Co-op & Business	\$ 58,650.00	\$4,887.50	\$4,887.50	\$4,887.50	\$4,887.50	\$4,887.50	\$4,887.50	\$4,887.50	\$4,887.50	\$4,887.50	\$4,887.50	\$4,887.50	\$4,887.50
reBOOT	\$ 30,000.00	\$2,500.00	\$2,500.00	\$2,500.00	\$2,500.00	\$2,500.00	\$2,500.00	\$2,500.00	\$2,500.00	\$2,500.00	\$2,500.00	\$2,500.00	\$2,500.00
Training	\$ 10,000.00	\$0.00	\$3,333.33	\$0.00	\$0.00	\$3,333.33	\$0.00	\$0.00	\$0.00	\$3,333.33	\$0.00	\$0.00	\$0.00
<u>Aadsookaanan Reconstruction</u>													
Research	\$ 80,000.00	\$6,666.67	\$6,666.67	\$6,666.67	\$6,666.67	\$6,666.67	\$6,666.67	\$6,666.67	\$6,666.67	\$6,666.67	\$6,666.67	\$6,666.67	\$6,666.67
Training	\$ 5,000.00	\$0.00	\$0.00	\$2,500.00	\$0.00	\$0.00	\$0.00	\$2,500.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00
<u>WaaWaa Immersion Video Production</u>													
Immersion Lead	\$ 99,705.00	\$8,308.75	\$8,308.75	\$8,308.75	\$8,308.75	\$8,308.75	\$8,308.75	\$8,308.75	\$8,308.75	\$8,308.75	\$8,308.75	\$8,308.75	\$8,308.75
WaaWaa Instructor	\$ 87,975.00	\$7,331.25	\$7,331.25	\$7,331.25	\$7,331.25	\$7,331.25	\$7,331.25	\$7,331.25	\$7,331.25	\$7,331.25	\$7,331.25	\$7,331.25	\$7,331.25
Training	\$ 4,500.00	\$0.00	\$1,500.00	\$0.00	\$0.00	\$1,500.00	\$0.00	\$0.00	\$0.00	\$1,500.00	\$0.00	\$0.00	\$0.00
Program Supplies	\$ 3,000.00	\$250.00	\$250.00	\$250.00	\$250.00	\$250.00	\$250.00	\$250.00	\$250.00	\$250.00	\$250.00	\$250.00	\$250.00
<u>Nishnaabemwin Production</u>													
WaaWaa Audio Overdub	\$ 85,000.00	\$7,083.33	\$7,083.33	\$7,083.33	\$7,083.33	\$7,083.33	\$7,083.33	\$7,083.33	\$7,083.33	\$7,083.33	\$7,083.33	\$7,083.33	\$7,083.33
Bilingual STEM Year 2	\$ 35,000.00	\$2,916.67	\$2,916.67	\$2,916.67	\$2,916.67	\$2,916.67	\$2,916.67	\$2,916.67	\$2,916.67	\$2,916.67	\$2,916.67	\$2,916.67	\$2,916.67
Training	\$ 3,000.00	\$0.00	\$0.00	\$1,500.00	\$0.00	\$0.00	\$0.00	\$1,500.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00
<u>Video Production Processing</u>													
Video Support – compression/uploading	\$ 47,342.00	\$3,945.17	\$3,945.17	\$3,945.17	\$3,945.17	\$3,945.17	\$3,945.17	\$3,945.17	\$3,945.17	\$3,945.17	\$3,945.17	\$3,945.17	\$3,945.17
Video Editing Year 2	\$ 15,750.00	\$0.00	\$0.00	\$5,250.00	\$0.00	\$0.00	\$5,250.00	\$0.00	\$0.00	\$5,250.00	\$0.00	\$0.00	\$0.00
<u>Meet-Up Function</u>													
Meet-Up Coordinator	\$ 47,342.00	\$3,945.17	\$3,945.17	\$3,945.17	\$3,945.17	\$3,945.17	\$3,945.17	\$3,945.17	\$3,945.17	\$3,945.17	\$3,945.17	\$3,945.17	\$3,945.17
Travel	\$ 1,500.00	\$125.00	\$125.00	\$125.00	\$125.00	\$125.00	\$125.00	\$125.00	\$125.00	\$125.00	\$125.00	\$125.00	\$125.00
Program Expenses	\$ 2,000.00	\$166.67	\$166.67	\$166.67	\$166.67	\$166.67	\$166.67	\$166.67	\$166.67	\$166.67	\$166.67	\$166.67	\$166.67
<u>Technology</u>													
BiigtigongX Administration	\$ 14,400.00	\$1,200.00	\$1,200.00	\$1,200.00	\$1,200.00	\$1,200.00	\$1,200.00	\$1,200.00	\$1,200.00	\$1,200.00	\$1,200.00	\$1,200.00	\$1,200.00

Biigtigong Nishnaabeg - Smart Cities Final Proposal

Appsembler	\$	36,000.00	\$3,000.00	\$3,000.00	\$3,000.00	\$3,000.00	\$3,000.00	\$3,000.00	\$3,000.00	\$3,000.00	\$3,000.00	\$3,000.00	\$3,000.00	\$3,000.00
Database Administration	\$	6,000.00	\$500.00	\$500.00	\$500.00	\$500.00	\$500.00	\$500.00	\$500.00	\$500.00	\$500.00	\$500.00	\$500.00	\$500.00
Engagement Strategy														
Within traditional territory	\$	5,000.00	\$416.67	\$416.67	\$416.67	\$416.67	\$416.67	\$416.67	\$416.67	\$416.67	\$416.67	\$416.67	\$416.67	\$416.67
Off traditional territory	\$	10,000.00	\$833.33	\$833.33	\$833.33	\$833.33	\$833.33	\$833.33	\$833.33	\$833.33	\$833.33	\$833.33	\$833.33	\$833.33
Equipment														
Software	\$	10,000.00	\$833.33	\$833.33	\$833.33	\$833.33	\$833.33	\$833.33	\$833.33	\$833.33	\$833.33	\$833.33	\$833.33	\$833.33
Student - Costs	\$	20,000.00	\$1,666.67	\$1,666.67	\$1,666.67	\$1,666.67	\$1,666.67	\$1,666.67	\$1,666.67	\$1,666.67	\$1,666.67	\$1,666.67	\$1,666.67	\$1,666.67
Total Cash Outflows	\$	1,082,379.00	\$81,502.42	\$93,552.42	\$94,369.08	\$92,052.42	\$88,285.75	\$95,352.42	\$89,119.08	\$92,052.42	\$93,535.75	\$90,385.75	\$83,452.42	\$88,719.08
Increase/Decrease in Cash		\$175,362.50	-\$86,687.50	-\$87,504.17	-\$85,187.50	-\$81,420.83	\$411,512.50	-\$82,254.17	-\$85,187.50	-\$86,670.83	\$166,479.17	-\$76,587.50	-\$81,854.17	
Beginning Cash Balance		\$0.00	\$175,362.50	\$88,675.00	\$1,170.83	-\$84,016.67	-\$165,437.50	\$246,075.00	\$163,820.83	\$78,633.33	-\$8,037.50	\$158,441.67	\$81,854.17	
Closing Cash Balance		\$175,362.50	\$88,675.00	\$1,170.83	-\$84,016.67	-\$165,437.50	\$246,075.00	\$163,820.83	\$78,633.33	-\$8,037.50	\$158,441.67	\$81,854.17	-0.00	

Biigtigong Nishnaabeg (Pic River First Nation), Ontario

Monthly Cash Flow Statement Year 3: July 2021 - June 2022

	Total	July	Aug	Sept	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	June
Cash Inflows:													
Infrastructure Canada	\$1,000,000.00	\$250,000.00	\$0.00	\$0.00	\$0.00	\$0.00	\$500,000.00	\$0.00	\$0.00	\$0.00	\$250,000.00	\$0.00	\$0.00
Biigtigong Source Funding	\$102,183.00	\$8,515.25	\$8,515.25	\$8,515.25	\$8,515.25	\$8,515.25	\$8,515.25	\$8,515.25	\$8,515.25	\$8,515.25	\$8,515.25	\$8,515.25	\$8,515.25
Total Cash Inflows	\$1,102,183.00	\$258,515.25	\$8,515.25	\$8,515.25	\$8,515.25	\$8,515.25	\$508,515.25	\$8,515.25	\$8,515.25	\$8,515.25	\$258,515.25	\$8,515.25	\$8,515.25
Cash Outflows:													
Governance													
Executive Board													
Meetings	\$	7,500.00	\$0.00	\$750.00	\$750.00	\$750.00	\$750.00	\$0.00	\$750.00	\$750.00	\$750.00	\$750.00	\$750.00
Expert Honorarium	\$	2,000.00	\$0.00	\$200.00	\$200.00	\$200.00	\$200.00	\$0.00	\$200.00	\$200.00	\$200.00	\$200.00	\$200.00
Youth Honorarium	\$	10,000.00	\$0.00	\$1,000.00	\$1,000.00	\$1,000.00	\$1,000.00	\$0.00	\$1,000.00	\$1,000.00	\$1,000.00	\$1,000.00	\$1,000.00
Travel	\$	5,000.00	\$0.00	\$0.00	\$1,666.67	\$0.00	\$0.00	\$0.00	\$1,666.67	\$0.00	\$1,666.67	\$0.00	\$0.00
Training	\$												
Aadsookaanan Team													
Meetings	\$	9,000.00	\$0.00	\$1,500.00	\$0.00	\$1,500.00	\$0.00	\$1,500.00	\$0.00	\$1,500.00	\$0.00	\$1,500.00	\$1,500.00
- Honorarium	\$	3,000.00	\$0.00	\$0.00	\$0.00	\$1,000.00	\$0.00	\$1,000.00	\$0.00	\$1,000.00	\$0.00	\$0.00	\$0.00
Training	\$												
Clan Engagement Team													
Meetings	\$	12,600.00	\$0.00	\$2,100.00	\$0.00	\$2,100.00	\$0.00	\$2,100.00	\$0.00	\$2,100.00	\$0.00	\$2,100.00	\$2,100.00
- Honorarium	\$												
Training/Engagement	\$	7,000.00	\$0.00	\$0.00	\$0.00	\$2,333.33	\$0.00	\$2,333.33	\$0.00	\$2,333.33	\$0.00	\$0.00	\$0.00
Staffing													
- Proposal Lead	\$	53,841.00	\$4,486.75	\$4,486.75	\$4,486.75	\$4,486.75	\$4,486.75	\$4,486.75	\$4,486.75	\$4,486.75	\$4,486.75	\$4,486.75	\$4,486.75
- Project Coordinator	\$	59,823.00	\$4,985.25	\$4,985.25	\$4,985.25	\$4,985.25	\$4,985.25	\$4,985.25	\$4,985.25	\$4,985.25	\$4,985.25	\$4,985.25	\$4,985.25
Training/Travel	\$	10,000.00	\$0.00	\$1,666.67	\$0.00	\$1,666.67	\$0.00	\$1,666.67	\$0.00	\$1,666.67	\$0.00	\$1,666.67	\$1,666.67
STEM Implementation													
SC Education Lead	\$	95,717.00	\$7,976.42	\$7,976.42	\$7,976.42	\$7,976.42	\$7,976.42	\$7,976.42	\$7,976.42	\$7,976.42	\$7,976.42	\$7,976.42	\$7,976.42
CompTIA A+	\$	95,717.00	\$7,976.42	\$7,976.42	\$7,976.42	\$7,976.42	\$7,976.42	\$7,976.42	\$7,976.42	\$7,976.42	\$7,976.42	\$7,976.42	\$7,976.42
Co-op & Business	\$	59,823.00	\$4,985.25	\$4,985.25	\$4,985.25	\$4,985.25	\$4,985.25	\$4,985.25	\$4,985.25	\$4,985.25	\$4,985.25	\$4,985.25	\$4,985.25
reBOOT	\$	30,000.00	\$2,500.00	\$2,500.00	\$2,500.00	\$2,500.00	\$2,500.00	\$2,500.00	\$2,500.00	\$2,500.00	\$2,500.00	\$2,500.00	\$2,500.00
Training	\$	10,000.00	\$0.00	\$3,333.33	\$0.00	\$0.00	\$3,333.33	\$0.00	\$0.00	\$0.00	\$3,333.33	\$0.00	\$0.00
Aadsookaanan Reconstruction													
Research	\$	72,500.00	\$6,041.67	\$6,041.67	\$6,041.67	\$6,041.67	\$6,041.67	\$6,041.67	\$6,041.67	\$6,041.67	\$6,041.67	\$6,041.67	\$6,041.67
Training	\$	5,000.00	\$0.00	\$0.00	\$2,500.00	\$0.00	\$0.00	\$2,500.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00
WaaWaa Immersion Video Production													
Immersion Lead	\$	101,699.00	\$8,474.92	\$8,474.92	\$8,474.92	\$8,474.92	\$8,474.92	\$8,474.92	\$8,474.92	\$8,474.92	\$8,474.92	\$8,474.92	\$8,474.92
WaaWaa Instructor	\$	89,735.00	\$7,477.92	\$7,477.92	\$7,477.92	\$7,477.92	\$7,477.92	\$7,477.92	\$7,477.92	\$7,477.92	\$7,477.92	\$7,477.92	\$7,477.92
Training	\$	4,500.00	\$0.00	\$1,500.00	\$0.00	\$0.00	\$1,500.00	\$0.00	\$0.00	\$0.00	\$1,500.00	\$0.00	\$0.00
Program Supplies	\$	3,000.00	\$250.00	\$250.00	\$250.00	\$250.00	\$250.00	\$250.00	\$250.00	\$250.00	\$250.00	\$250.00	\$250.00
Nishnaabemwin Production													
WaaWaa Audio Overdub	\$	85,000.00	\$7,083.33	\$7,083.33	\$7,083.33	\$7,083.33	\$7,083.33	\$7,083.33	\$7,083.33	\$7,083.33	\$7,083.33	\$7,083.33	\$7,083.33
Bilingual STEM Year 3	\$	45,000.00	\$3,750.00	\$3,750.00	\$3,750.00	\$3,750.00	\$3,750.00	\$3,750.00	\$3,750.00	\$3,750.00	\$3,750.00	\$3,750.00	\$3,750.00
Training	\$	3,000.00	\$0.00	\$0.00	\$1,500.00	\$0.00	\$0.00	\$0.00	\$1,500.00	\$0.00	\$0.00	\$0.00	\$0.00
Video Production Processing													
Video Support – compression/uploading	\$	48,289.00	\$4,024.08	\$4,024.08	\$4,024.08	\$4,024.08	\$4,024.08	\$4,024.08	\$4,024.08	\$4,024.08	\$4,024.08	\$4,024.08	\$4,024.08
Video Editing Year 3	\$	20,250.00	\$0.00	\$0.00	\$6,750.00	\$0.00	\$0.00	\$6,750.00	\$0.00	\$0.00	\$6,750.00	\$0.00	\$0.00
Meet-Up Function													
Meet-Up Coordinator	\$	48,289.00	\$4,024.08	\$4,024.08	\$4,024.08	\$4,024.08	\$4,024.08	\$4,024.08	\$4,024.08	\$4,024.08	\$4,024.08	\$4,024.08	\$4,024.08
Travel	\$	1,500.00	\$125.00	\$125.00	\$125.00	\$125.00	\$125.00	\$125.00	\$125.00	\$125.00	\$125.00	\$125.00	\$125.00
Program Expenses	\$	2,000.00	\$166.67	\$166.67	\$166.67	\$166.67	\$166.67	\$166.67	\$166.67	\$166.67	\$166.67	\$166.67	\$166.67
Technology													
BiigtigongX Administration	\$	14,400.00	\$1,200.00	\$1,200.00	\$1,200.00	\$1,200.00	\$1,200.00	\$1,200.00	\$1,200.00	\$1,200.00	\$1,200.00	\$1,200.00	\$1,200.00

Biigtigong Nishnaabeg - Smart Cities Final Proposal

Appsembler	\$	36,000.00	\$3,000.00	\$3,000.00	\$3,000.00	\$3,000.00	\$3,000.00	\$3,000.00	\$3,000.00	\$3,000.00	\$3,000.00	\$3,000.00	\$3,000.00	\$3,000.00
Database Administration	\$	6,000.00	\$500.00	\$500.00	\$500.00	\$500.00	\$500.00	\$500.00	\$500.00	\$500.00	\$500.00	\$500.00	\$500.00	\$500.00
Engagement Strategy														
Within traditional territory	\$	5,000.00	\$416.67	\$416.67	\$416.67	\$416.67	\$416.67	\$416.67	\$416.67	\$416.67	\$416.67	\$416.67	\$416.67	\$416.67
Off traditional territory	\$	10,000.00	\$833.33	\$833.33	\$833.33	\$833.33	\$833.33	\$833.33	\$833.33	\$833.33	\$833.33	\$833.33	\$833.33	\$833.33
Equipment														
Software	\$	10,000.00	\$833.33	\$833.33	\$833.33	\$833.33	\$833.33	\$833.33	\$833.33	\$833.33	\$833.33	\$833.33	\$833.33	\$833.33
Student - Costs	\$	20,000.00	\$1,666.67	\$1,666.67	\$1,666.67	\$1,666.67	\$1,666.67	\$1,666.67	\$1,666.67	\$1,666.67	\$1,666.67	\$1,666.67	\$1,666.67	\$1,666.67
Total Cash Outflows	\$	1,102,183.00	\$82,777.75	\$94,827.75	\$97,144.42	\$93,327.75	\$89,561.08	\$98,127.75	\$90,394.42	\$93,327.75	\$96,311.08	\$91,661.08	\$84,727.75	\$89,994.42
Increase/Decrease in Cash		\$175,737.50	-\$86,312.50	-\$88,629.17	-\$84,812.50	-\$81,045.83	\$410,387.50	-\$81,879.17	-\$84,812.50	-\$87,795.83	\$166,854.17	-\$76,212.50	-\$81,479.17	
Beginning Cash Balance		\$0.00	\$175,737.50	\$89,425.00	\$795.83	-\$84,016.67	-\$165,062.50	\$245,325.00	\$163,445.83	\$78,633.33	-\$9,162.50	\$157,691.67	\$81,479.17	
Closing Cash Balance		<u>\$175,737.50</u>	<u>\$89,425.00</u>	<u>\$795.83</u>	<u>-\$84,016.67</u>	<u>-\$165,062.50</u>	<u>\$245,325.00</u>	<u>\$163,445.83</u>	<u>\$78,633.33</u>	<u>-\$9,162.50</u>	<u>\$157,691.67</u>	<u>\$81,479.17</u>	<u>0.00</u>	

Biigtigong Nishnaabeg - Smart Cities Final Proposal

Biigtigong Nishnaabeg (Pic River First Nation), Ontario

Monthly Cash Flow Statement Year 4: July 2022 - June 2023

	Total	July	Aug	Sept	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	June
Cash Inflows:													
Infrastructure Canada	\$1,000,000.00	\$250,000.00	\$0.00	\$0.00	\$0.00	\$0.00	\$500,000.00	\$0.00	\$0.00	\$0.00	\$250,000.00	\$0.00	\$0.00
Biigtigong Source Funding	\$104,245.00	\$8,687.08	\$8,687.08	\$8,687.08	\$8,687.08	\$8,687.08	\$8,687.08	\$8,687.08	\$8,687.08	\$8,687.08	\$8,687.08	\$8,687.08	\$8,687.08
Total Cash Inflows	\$1,104,245.00	\$258,687.08	\$8,687.08	\$8,687.08	\$8,687.08	\$8,687.08	\$508,687.08	\$8,687.08	\$8,687.08	\$8,687.08	\$258,687.08	\$8,687.08	\$8,687.08
Cash Outflows:													
Governance													
<u>Executive Board</u>													
Meetings	\$	7,500.00	\$0.00	\$750.00	\$750.00	\$750.00	\$750.00	\$0.00	\$750.00	\$750.00	\$750.00	\$750.00	\$750.00
Expert Honorarium	\$	2,000.00	\$0.00	\$200.00	\$200.00	\$200.00	\$200.00	\$0.00	\$200.00	\$200.00	\$200.00	\$200.00	\$200.00
Youth Honorarium	\$	10,000.00	\$0.00	\$1,000.00	\$1,000.00	\$1,000.00	\$1,000.00	\$0.00	\$1,000.00	\$1,000.00	\$1,000.00	\$1,000.00	\$1,000.00
Travel	\$	5,000.00	\$0.00	\$0.00	\$1,666.67	\$0.00	\$0.00	\$0.00	\$1,666.67	\$0.00	\$1,666.67	\$0.00	\$0.00
Training	\$												
<u>Aadsookaanan Team</u>													
Meetings	\$	9,000.00	\$0.00	\$1,500.00	\$0.00	\$1,500.00	\$0.00	\$1,500.00	\$0.00	\$1,500.00	\$0.00	\$1,500.00	\$1,500.00
- Honorarium	\$	3,000.00	\$0.00	\$0.00	\$0.00	\$1,000.00	\$0.00	\$1,000.00	\$0.00	\$1,000.00	\$0.00	\$0.00	\$0.00
Training	\$												
<u>Clan Engagement Team</u>													
Meetings	\$	12,600.00	\$0.00	\$2,100.00	\$0.00	\$2,100.00	\$0.00	\$2,100.00	\$0.00	\$2,100.00	\$0.00	\$2,100.00	\$2,100.00
- Honorarium	\$												
Training/Engagement	\$	4,000.00	\$0.00	\$0.00	\$0.00	\$1,333.33	\$0.00	\$1,333.33	\$0.00	\$1,333.33	\$0.00	\$0.00	\$0.00
<u>Staffing</u>													
- Proposal Lead	\$	54,918.00	\$4,576.50	\$4,576.50	\$4,576.50	\$4,576.50	\$4,576.50	\$4,576.50	\$4,576.50	\$4,576.50	\$4,576.50	\$4,576.50	\$4,576.50
- Project Coordinator	\$	61,020.00	\$5,085.00	\$5,085.00	\$5,085.00	\$5,085.00	\$5,085.00	\$5,085.00	\$5,085.00	\$5,085.00	\$5,085.00	\$5,085.00	\$5,085.00
Training/Travel	\$	10,000.00	\$0.00	\$1,666.67	\$0.00	\$1,666.67	\$0.00	\$1,666.67	\$0.00	\$1,666.67	\$0.00	\$1,666.67	\$1,666.67
<u>STEM Implementation</u>													
SC Education Lead	\$	97,632.00	\$8,136.00	\$8,136.00	\$8,136.00	\$8,136.00	\$8,136.00	\$8,136.00	\$8,136.00	\$8,136.00	\$8,136.00	\$8,136.00	\$8,136.00
CompTIA A+	\$	97,632.00	\$8,136.00	\$8,136.00	\$8,136.00	\$8,136.00	\$8,136.00	\$8,136.00	\$8,136.00	\$8,136.00	\$8,136.00	\$8,136.00	\$8,136.00
Co-op & Business	\$	61,020.00	\$5,085.00	\$5,085.00	\$5,085.00	\$5,085.00	\$5,085.00	\$5,085.00	\$5,085.00	\$5,085.00	\$5,085.00	\$5,085.00	\$5,085.00
reBOOT	\$	30,000.00	\$2,500.00	\$2,500.00	\$2,500.00	\$2,500.00	\$2,500.00	\$2,500.00	\$2,500.00	\$2,500.00	\$2,500.00	\$2,500.00	\$2,500.00
Training	\$	10,000.00	\$0.00	\$3,333.33	\$0.00	\$0.00	\$3,333.33	\$0.00	\$0.00	\$0.00	\$3,333.33	\$0.00	\$0.00
<u>Aadsookaanan Reconstruction</u>													
Research	\$	50,000.00	\$4,166.67	\$4,166.67	\$4,166.67	\$4,166.67	\$4,166.67	\$4,166.67	\$4,166.67	\$4,166.67	\$4,166.67	\$4,166.67	\$4,166.67
Training	\$	5,000.00	\$0.00	\$0.00	\$2,500.00	\$0.00	\$0.00	\$2,500.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00
<u>WaaWaa Immersion Video Production</u>													
Immersion Lead	\$	103,733.00	\$8,644.42	\$8,644.42	\$8,644.42	\$8,644.42	\$8,644.42	\$8,644.42	\$8,644.42	\$8,644.42	\$8,644.42	\$8,644.42	\$8,644.42
WaaWaa Instructor	\$	91,530.00	\$7,627.50	\$7,627.50	\$7,627.50	\$7,627.50	\$7,627.50	\$7,627.50	\$7,627.50	\$7,627.50	\$7,627.50	\$7,627.50	\$7,627.50
Training	\$	4,500.00	\$0.00	\$1,500.00	\$0.00	\$0.00	\$1,500.00	\$0.00	\$0.00	\$0.00	\$1,500.00	\$0.00	\$0.00
Program Supplies	\$	3,000.00	\$250.00	\$250.00	\$250.00	\$250.00	\$250.00	\$250.00	\$250.00	\$250.00	\$250.00	\$250.00	\$250.00
<u>Nishnaabemwin Production</u>													
WaaWaa Audio Overdub	\$	85,000.00	\$7,083.33	\$7,083.33	\$7,083.33	\$7,083.33	\$7,083.33	\$7,083.33	\$7,083.33	\$7,083.33	\$7,083.33	\$7,083.33	\$7,083.33
Bilingual STEM Year 4	\$	55,000.00	\$4,583.33	\$4,583.33	\$4,583.33	\$4,583.33	\$4,583.33	\$4,583.33	\$4,583.33	\$4,583.33	\$4,583.33	\$4,583.33	\$4,583.33
Training	\$	3,000.00	\$0.00	\$0.00	\$1,500.00	\$0.00	\$0.00	\$1,500.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00
<u>Video Production Processing</u>													
Video Support – compression/uploading	\$	49,255.00	\$4,104.58	\$4,104.58	\$4,104.58	\$4,104.58	\$4,104.58	\$4,104.58	\$4,104.58	\$4,104.58	\$4,104.58	\$4,104.58	\$4,104.58
Video Editing Year 4	\$	24,750.00	\$0.00	\$0.00	\$8,250.00	\$0.00	\$0.00	\$8,250.00	\$0.00	\$0.00	\$8,250.00	\$0.00	\$0.00
<u>Meet-Up Function</u>													
Meet-Up Coordinator	\$	49,255.00	\$4,104.58	\$4,104.58	\$4,104.58	\$4,104.58	\$4,104.58	\$4,104.58	\$4,104.58	\$4,104.58	\$4,104.58	\$4,104.58	\$4,104.58
Travel	\$	1,500.00	\$125.00	\$125.00	\$125.00	\$125.00	\$125.00	\$125.00	\$125.00	\$125.00	\$125.00	\$125.00	\$125.00
Program Expenses	\$	2,000.00	\$166.67	\$166.67	\$166.67	\$166.67	\$166.67	\$166.67	\$166.67	\$166.67	\$166.67	\$166.67	\$166.67
<u>Technology</u>													
BiigtigongX Administration	\$	14,400.00	\$1,200.00	\$1,200.00	\$1,200.00	\$1,200.00	\$1,200.00	\$1,200.00	\$1,200.00	\$1,200.00	\$1,200.00	\$1,200.00	\$1,200.00

Biigtigong Nishnaabeg - Smart Cities Final Proposal

Appsembler	\$	36,000.00	\$3,000.00	\$3,000.00	\$3,000.00	\$3,000.00	\$3,000.00	\$3,000.00	\$3,000.00	\$3,000.00	\$3,000.00	\$3,000.00	\$3,000.00	\$3,000.00
Database Administration	\$	6,000.00	\$500.00	\$500.00	\$500.00	\$500.00	\$500.00	\$500.00	\$500.00	\$500.00	\$500.00	\$500.00	\$500.00	\$500.00
Engagement Strategy														
Within traditional territory	\$	5,000.00	\$416.67	\$416.67	\$416.67	\$416.67	\$416.67	\$416.67	\$416.67	\$416.67	\$416.67	\$416.67	\$416.67	\$416.67
Off traditional territory	\$	10,000.00	\$833.33	\$833.33	\$833.33	\$833.33	\$833.33	\$833.33	\$833.33	\$833.33	\$833.33	\$833.33	\$833.33	\$833.33
Equipment														
Software	\$	10,000.00	\$833.33	\$833.33	\$833.33	\$833.33	\$833.33	\$833.33	\$833.33	\$833.33	\$833.33	\$833.33	\$833.33	\$833.33
Student - Costs	\$	20,000.00	\$1,666.67	\$1,666.67	\$1,666.67	\$1,666.67	\$1,666.67	\$1,666.67	\$1,666.67	\$1,666.67	\$1,666.67	\$1,666.67	\$1,666.67	\$1,666.67
Total Cash Outflows		\$ 1,104,245.00	\$82,824.58	\$94,874.58	\$98,691.25	\$92,374.58	\$89,607.92	\$98,674.58	\$90,441.25	\$92,374.58	\$97,857.92	\$91,707.92	\$84,774.58	\$90,041.25
Increase/Decrease in Cash		\$175,862.50	-\$86,187.50	-\$90,004.17	-\$83,687.50	-\$80,920.83	\$410,012.50	-\$81,754.17	-\$83,687.50	-\$89,170.83	\$166,979.17	-\$76,087.50	-\$81,354.17	
Beginning Cash Balance		\$0.00	\$175,862.50	\$89,675.00	-\$329.17	-\$84,016.67	-\$164,937.50	\$245,075.00	\$163,320.83	\$79,633.33	-\$9,537.50	\$157,441.67	\$81,354.17	
Closing Cash Balance		<u>\$175,862.50</u>	<u>\$89,675.00</u>	<u>-\$329.17</u>	<u>-\$84,016.67</u>	<u>-\$164,937.50</u>	<u>\$245,075.00</u>	<u>\$163,320.83</u>	<u>\$79,633.33</u>	<u>-\$9,537.50</u>	<u>\$157,441.67</u>	<u>\$81,354.17</u>	<u>0.00</u>	

Biigtigong Nishnaabeg (Pic River First Nation), Ontario

Monthly Cash Flow Statement Year 5: July 2023 - June 2024

	<u>Total</u>	<u>July</u>	<u>Aug</u>	<u>Sept</u>	<u>Oct</u>	<u>Nov</u>	<u>Dec</u>	<u>Jan</u>	<u>Feb</u>	<u>Mar</u>	<u>Apr</u>	<u>May</u>	<u>June</u>
Cash Inflows:													
Infrastructure Canada	\$1,000,000.00	\$250,000.00	\$0.00	\$0.00	\$0.00	\$0.00	\$500,000.00	\$0.00	\$0.00	\$0.00	\$250,000.00	\$0.00	\$0.00
Biigtigong Source Funding	\$101,065.00	\$8,422.08	\$8,422.08	\$8,422.08	\$8,422.08	\$8,422.08	\$8,422.08	\$8,422.08	\$8,422.08	\$8,422.08	\$8,422.08	\$8,422.08	\$8,422.08
Total Cash Inflows	\$1,101,065.00	\$258,422.08	\$8,422.08	\$8,422.08	\$8,422.08	\$8,422.08	\$508,422.08	\$8,422.08	\$8,422.08	\$8,422.08	\$258,422.08	\$8,422.08	\$8,422.08
Cash Outflows:													
Governance													
Executive Board													
Meetings	\$	7,500.00	\$0.00	\$750.00	\$750.00	\$750.00	\$750.00	\$0.00	\$750.00	\$750.00	\$750.00	\$750.00	\$750.00
Expert Honorarium	\$	2,000.00	\$0.00	\$200.00	\$200.00	\$200.00	\$200.00	\$0.00	\$200.00	\$200.00	\$200.00	\$200.00	\$200.00
Youth Honorarium	\$	10,000.00	\$0.00	\$1,000.00	\$1,000.00	\$1,000.00	\$1,000.00	\$0.00	\$1,000.00	\$1,000.00	\$1,000.00	\$1,000.00	\$1,000.00
Travel	\$	5,000.00	\$0.00	\$0.00	\$1,666.67	\$0.00	\$0.00	\$1,666.67	\$0.00	\$0.00	\$1,666.67	\$0.00	\$0.00
Training	\$	9,000.00	\$0.00	\$1,500.00	\$0.00	\$1,500.00	\$0.00	\$1,500.00	\$0.00	\$1,500.00	\$0.00	\$1,500.00	\$0.00
Aadsookaanan Team													
Meetings - Honorarium	\$	12,600.00	\$0.00	\$2,100.00	\$0.00	\$2,100.00	\$0.00	\$2,100.00	\$0.00	\$2,100.00	\$0.00	\$2,100.00	\$0.00
Clan Engagement Team													
Meetings - Honorarium	\$	2,000.00	\$0.00	\$0.00	\$0.00	\$666.67	\$0.00	\$666.67	\$0.00	\$666.67	\$0.00	\$0.00	\$0.00
Staffing													
- Proposal Lead	\$	56,017.00	\$4,668.08	\$4,668.08	\$4,668.08	\$4,668.08	\$4,668.08	\$4,668.08	\$4,668.08	\$4,668.08	\$4,668.08	\$4,668.08	\$4,668.08
- Project Coordinator	\$	62,241.00	\$5,186.75	\$5,186.75	\$5,186.75	\$5,186.75	\$5,186.75	\$5,186.75	\$5,186.75	\$5,186.75	\$5,186.75	\$5,186.75	\$5,186.75
Training/Travel													
STEM Implementation	\$	10,000.00	\$0.00	\$1,666.67	\$0.00	\$1,666.67	\$0.00	\$1,666.67	\$0.00	\$1,666.67	\$0.00	\$1,666.67	\$0.00
SC Education Lead	\$	99,584.00	\$8,298.67	\$8,298.67	\$8,298.67	\$8,298.67	\$8,298.67	\$8,298.67	\$8,298.67	\$8,298.67	\$8,298.67	\$8,298.67	\$8,298.67
CompTIA A+	\$	99,584.00	\$8,298.67	\$8,298.67	\$8,298.67	\$8,298.67	\$8,298.67	\$8,298.67	\$8,298.67	\$8,298.67	\$8,298.67	\$8,298.67	\$8,298.67
Co-op & Business	\$	62,241.00	\$5,186.75	\$5,186.75	\$5,186.75	\$5,186.75	\$5,186.75	\$5,186.75	\$5,186.75	\$5,186.75	\$5,186.75	\$5,186.75	\$5,186.75
reBOOT	\$	30,000.00	\$2,500.00	\$2,500.00	\$2,500.00	\$2,500.00	\$2,500.00	\$2,500.00	\$2,500.00	\$2,500.00	\$2,500.00	\$2,500.00	\$2,500.00
Training	\$	3,000.00	\$0.00	\$1,000.00	\$0.00	\$0.00	\$1,000.00	\$0.00	\$0.00	\$0.00	\$1,000.00	\$0.00	\$0.00
Aadsookaanan Reconstruction													
Research	\$	50,000.00	\$4,166.67	\$4,166.67	\$4,166.67	\$4,166.67	\$4,166.67	\$4,166.67	\$4,166.67	\$4,166.67	\$4,166.67	\$4,166.67	\$4,166.67
Training	\$	5,000.00	\$0.00	\$0.00	\$2,500.00	\$0.00	\$0.00	\$2,500.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00
WaaVaa Immersion Video Production													
Immersion Lead	\$	105,808.00	\$8,817.33	\$8,817.33	\$8,817.33	\$8,817.33	\$8,817.33	\$8,817.33	\$8,817.33	\$8,817.33	\$8,817.33	\$8,817.33	\$8,817.33
WaaVaa Instructor	\$	93,360.00	\$7,780.00	\$7,780.00	\$7,780.00	\$7,780.00	\$7,780.00	\$7,780.00	\$7,780.00	\$7,780.00	\$7,780.00	\$7,780.00	\$7,780.00
Program Supplies	\$	3,000.00	\$250.00	\$250.00	\$250.00	\$250.00	\$250.00	\$250.00	\$250.00	\$250.00	\$250.00	\$250.00	\$250.00
Nishnaabemwin Production													
WaaVaa Audio Overdub	\$	85,000.00	\$7,083.33	\$7,083.33	\$7,083.33	\$7,083.33	\$7,083.33	\$7,083.33	\$7,083.33	\$7,083.33	\$7,083.33	\$7,083.33	\$7,083.33
Bilingual STEM Year 5	\$	55,000.00	\$4,583.33	\$4,583.33	\$4,583.33	\$4,583.33	\$4,583.33	\$4,583.33	\$4,583.33	\$4,583.33	\$4,583.33	\$4,583.33	\$4,583.33
Training	\$	3,000.00	\$0.00	\$0.00	\$1,500.00	\$0.00	\$0.00	\$1,500.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00
Video Production Processing													
Video Support – compression/uploading	\$	50,240.00	\$4,186.67	\$4,186.67	\$4,186.67	\$4,186.67	\$4,186.67	\$4,186.67	\$4,186.67	\$4,186.67	\$4,186.67	\$4,186.67	\$4,186.67
Video Editing Year 5	\$	24,750.00	\$0.00	\$0.00	\$8,250.00	\$0.00	\$0.00	\$8,250.00	\$0.00	\$0.00	\$8,250.00	\$0.00	\$0.00
Meet-Up Function													
Meet-Up Coordinator	\$	50,240.00	\$4,186.67	\$4,186.67	\$4,186.67	\$4,186.67	\$4,186.67	\$4,186.67	\$4,186.67	\$4,186.67	\$4,186.67	\$4,186.67	\$4,186.67
Travel	\$	1,500.00	\$125.00	\$125.00	\$125.00	\$125.00	\$125.00	\$125.00	\$125.00	\$125.00	\$125.00	\$125.00	\$125.00
Program Expenses	\$	2,000.00	\$166.67	\$166.67	\$166.67	\$166.67	\$166.67	\$166.67	\$166.67	\$166.67	\$166.67	\$166.67	\$166.67
Technology													
BiigtigongX Administration	\$	14,400.00	\$1,200.00	\$1,200.00	\$1,200.00	\$1,200.00	\$1,200.00	\$1,200.00	\$1,200.00	\$1,200.00	\$1,200.00	\$1,200.00	\$1,200.00
Appsembler	\$	36,000.00	\$3,000.00	\$3,000.00	\$3,000.00	\$3,000.00	\$3,000.00	\$3,000.00	\$3,000.00	\$3,000.00	\$3,000.00	\$3,000.00	\$3,000.00
Database Administration	\$	6,000.00	\$500.00	\$500.00	\$500.00	\$500.00	\$500.00	\$500.00	\$500.00	\$500.00	\$500.00	\$500.00	\$500.00

Biigtigong Nishnaabeg - Smart Cities Final Proposal

Engagement Strategy														
Within traditional territory	\$	5,000.00	\$416.67	\$416.67	\$416.67	\$416.67	\$416.67	\$416.67	\$416.67	\$416.67	\$416.67	\$416.67	\$416.67	\$416.67
Off traditional territory	\$	10,000.00	\$833.33	\$833.33	\$833.33	\$833.33	\$833.33	\$833.33	\$833.33	\$833.33	\$833.33	\$833.33	\$833.33	\$833.33
Equipment														
Software	\$	10,000.00	\$833.33	\$833.33	\$833.33	\$833.33	\$833.33	\$833.33	\$833.33	\$833.33	\$833.33	\$833.33	\$833.33	\$833.33
Student - Costs	\$	20,000.00	\$1,666.67	\$1,666.67	\$1,666.67	\$1,666.67	\$1,666.67	\$1,666.67	\$1,666.67	\$1,666.67	\$1,666.67	\$1,666.67	\$1,666.67	\$1,666.67
Total Cash Outflows	\$	1,101,065.00	\$83,934.58	\$92,151.25	\$99,801.25	\$91,817.92	\$86,884.58	\$98,117.92	\$91,551.25	\$91,817.92	\$95,134.58	\$92,817.92	\$85,884.58	\$91,151.25
Increase/Decrease in Cash														
Beginning Cash Balance		\$0.00	\$174,487.50	\$90,758.33	-\$620.83	-\$84,016.67	-\$162,479.17	\$247,825.00	\$164,695.83	\$81,300.00	-\$5,412.50	\$160,191.67	\$82,729.17	-\$0.00
Closing Cash Balance		\$174,487.50	\$90,758.33	-\$620.83	-\$84,016.67	-\$162,479.17	\$247,825.00	\$164,695.83	\$81,300.00	-\$5,412.50	\$160,191.67	\$82,729.17	-\$0.00	-\$0.00

Biigtigong Nishnaabeg (Pic River First Nation), Ontario
Annual Cash Flow For 5 Years

	<u>2019/2020</u>	<u>2020/2021</u>	<u>2021/2022</u>	<u>2022/2023</u>	<u>2023/2024</u>
Cash Inflows:					
Infrastructure Canada	\$1,000,000.00	\$1,000,000.00	\$1,000,000.00	\$1,000,000.00	\$1,000,000.00
Biigtigong Source Funding	\$67,578.00	\$82,379.00	\$102,183.00	\$104,245.00	\$101,065.00
Total Cash Inflows	\$1,067,578.00	\$1,082,379.00	\$1,102,183.00	\$1,104,245.00	\$1,101,065.00
Cash Outflows:					
Governance					
Executive Board					
Meetings	\$ 7,500.00	\$ 7,500.00	\$ 7,500.00	\$ 7,500.00	\$ 7,500.00
Expert Honorarium	\$ 2,000.00	\$ 2,000.00	\$ 2,000.00	\$ 2,000.00	\$ 2,000.00
Youth Honorarium	\$ 10,000.00	\$ 10,000.00	\$ 10,000.00	\$ 10,000.00	\$ 10,000.00
Travel	\$ 5,000.00	\$ 5,000.00	\$ 5,000.00	\$ 5,000.00	\$ 5,000.00
Training	\$ 5,000.00	\$ 5,000.00	\$ 5,000.00	\$ 5,000.00	\$ 5,000.00
Aadsookaanan Team					
Meetings	\$ 9,000.00	\$ 9,000.00	\$ 9,000.00	\$ 9,000.00	\$ 9,000.00
- Honorarium	\$ 3,000.00	\$ 3,000.00	\$ 3,000.00	\$ 3,000.00	\$ -
Training	\$ 3,000.00	\$ 3,000.00	\$ 3,000.00	\$ 3,000.00	\$ -
Clan Engagement Team					
Meetings	\$ 12,600.00	\$ 12,600.00	\$ 12,600.00	\$ 12,600.00	\$ 12,600.00
- Honorarium	\$ 7,000.00	\$ 7,000.00	\$ 7,000.00	\$ 4,000.00	\$ 2,000.00
Training/Engagement	\$ 7,000.00	\$ 7,000.00	\$ 7,000.00	\$ 4,000.00	\$ 2,000.00
Staffing					
- Proposal Lead	\$ 51,750.00	\$ 52,785.00	\$ 53,841.00	\$ 54,918.00	\$ 56,017.00
- Project Coordinator	\$ 57,500.00	\$ 58,650.00	\$ 59,823.00	\$ 61,020.00	\$ 62,241.00
Training/Travel	\$ 10,000.00	\$ 10,000.00	\$ 10,000.00	\$ 10,000.00	\$ 10,000.00
STEM Implementation					
SC Education Lead	\$ 92,000.00	\$ 93,840.00	\$ 95,717.00	\$ 97,632.00	\$ 99,584.00
CompTIA A+	\$ 92,000.00	\$ 93,840.00	\$ 95,717.00	\$ 97,632.00	\$ 99,584.00
Co-op & Business	\$ 57,500.00	\$ 58,650.00	\$ 59,823.00	\$ 61,020.00	\$ 62,241.00
reBOOT	\$ 30,000.00	\$ 30,000.00	\$ 30,000.00	\$ 30,000.00	\$ 30,000.00
Training	\$ 10,000.00	\$ 10,000.00	\$ 10,000.00	\$ 10,000.00	\$ 3,000.00
Aadsookaanan Reconstruction					
Research	\$ 80,000.00	\$ 80,000.00	\$ 72,500.00	\$ 50,000.00	\$ 50,000.00
Training	\$ 5,000.00	\$ 5,000.00	\$ 5,000.00	\$ 5,000.00	\$ 5,000.00
WaaWaa Immersion Video Production					
Immersion Lead	\$ 97,750.00	\$ 99,705.00	\$ 101,699.00	\$ 103,733.00	\$ 105,808.00
WaaWaa Instructor	\$ 86,250.00	\$ 87,975.00	\$ 89,735.00	\$ 91,530.00	\$ 93,360.00
Training	\$ 4,500.00	\$ 4,500.00	\$ 4,500.00	\$ 4,500.00	\$ -
Program Supplies	\$ 3,000.00	\$ 3,000.00	\$ 3,000.00	\$ 3,000.00	\$ 3,000.00
Nishnaabemwin Production					
WaaWaa Audio Overdub	\$ 85,000.00	\$ 85,000.00	\$ 85,000.00	\$ 85,000.00	\$ 85,000.00
Bilingual STEM	\$ 12,500.00	\$ 35,000.00	\$ 45,000.00	\$ 55,000.00	\$ 55,000.00
Training	\$ 3,000.00	\$ 3,000.00	\$ 3,000.00	\$ 3,000.00	\$ 3,000.00
Video Production Processing					
Video Support – compression/uploading	\$ 46,414.00	\$ 47,342.00	\$ 48,289.00	\$ 49,255.00	\$ 50,240.00
Video Editing	\$ 4,500.00	\$ 15,750.00	\$ 20,250.00	\$ 24,750.00	\$ 24,750.00
Meet-Up Function					
Meet-Up Coordinator	\$ 46,414.00	\$ 47,342.00	\$ 48,289.00	\$ 49,255.00	\$ 50,240.00
Travel	\$ 1,500.00	\$ 1,500.00	\$ 1,500.00	\$ 1,500.00	\$ 1,500.00
Program Expenses	\$ 2,000.00	\$ 2,000.00	\$ 2,000.00	\$ 2,000.00	\$ 2,000.00
Technology					
BiigtigongX Administration	\$ 14,400.00	\$ 14,400.00	\$ 14,400.00	\$ 14,400.00	\$ 14,400.00
Appsembler	\$ 36,000.00	\$ 36,000.00	\$ 36,000.00	\$ 36,000.00	\$ 36,000.00
Database Administration	\$ 6,000.00	\$ 6,000.00	\$ 6,000.00	\$ 6,000.00	\$ 6,000.00
Engagement Strategy					
Within traditional territory	\$ 5,000.00	\$ 5,000.00	\$ 5,000.00	\$ 5,000.00	\$ 5,000.00
Off traditional territory	\$ 10,000.00	\$ 10,000.00	\$ 10,000.00	\$ 10,000.00	\$ 10,000.00
Equipment					
Computers	\$ 30,000.00	\$ -	\$ -	\$ -	\$ -
Tablets	\$ 1,500.00	\$ -	\$ -	\$ -	\$ -
Software	\$ 10,000.00	\$ 10,000.00	\$ 10,000.00	\$ 10,000.00	\$ 10,000.00
Student - Costs	\$ 20,000.00	\$ 20,000.00	\$ 20,000.00	\$ 20,000.00	\$ 20,000.00
Total Cash Outflows	\$ 1,067,578.00	\$ 1,082,379.00	\$ 1,102,183.00	\$ 1,104,245.00	\$ 1,101,065.00
Increase/Decrease in Cash	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00
Beginning Cash Balance	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00
Closing Cash Balance	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00

Annual Cash Flow

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5 Year Detailed Listing of Project Milestones by Fiscal Year

The following milestones have been developed for the purpose of performance management and achieving our outcomes. This listing has been aligned with our budgeting process and our cash flow plans. Additional information on some specific measurements are also discussed in Chapter 2.

Fiscal Year 1: Milestones First Half

Q1 2019 -- April 1, 2019 to June 30, 2019 & Q2 2019 -- July 1, 2019 to September 30, 2019

Milestone Areas	Milestone Descriptions	Completion Date
Governance		
Official Start of Project	<ul style="list-style-type: none"> Signed Contribution Agreement 	Q1 2019 – June 30, 2019
Leadership Orientation	<ul style="list-style-type: none"> Project Overview Chief & Council, Senior Management Team 	Q1 2019 – June 30, 2019
SC Executive Board	<ul style="list-style-type: none"> Terms of Reference review 1st Board meeting held Work plan complete 	Q2 2019 – September 30, 2019
Aadsookaanan Team	<ul style="list-style-type: none"> Terms of Reference review 1st Team meeting held Work plan complete 	Q2 2019 – September 30, 2019
Clan Engagement Team	<ul style="list-style-type: none"> Education package roll-out Community wide event 	Q2 2019 – September 30, 2019
Human Resource Management <ul style="list-style-type: none"> New Employee Orientation & Administration - Biigtigong SC Project Orientation 	<ul style="list-style-type: none"> SC Director/Lead SC Project Coordinator Nishnaabemwin Lead SC Education Lead SC Immersion Lead CompTIA A+ Instructor Land-base Meet-up Coordinator WaaWaa Immersion Instructor SC Video Developer SC Co-op/Business Coordinator SC reBOOT Coordinator 	Q1 2019 – June 30, 2019 Q2 2019 – September 30, 2019
Management	<ul style="list-style-type: none"> Budgets approved Team Orientation Finance/HR policy & procedures implementation Financial reporting set up Communication system done 	Q1 2019 – June 30, 2019 Q2 2019 – September 30, 2019
BiigtigongX	<ul style="list-style-type: none"> Administrator duties identified BiigtigongX in place Appsembler implementation Software training 	Q1 2019 – June 30, 2019 Q2 2019 – September 30, 2019
K - 8 STEM Implementation		
Summer Coding Camp	<ul style="list-style-type: none"> Pre-requisite for incoming grade 6 students Open to others 	Q2 2019 – September 30, 2019
K – 8 Math & Science on-line Enhancement Orientation	<ul style="list-style-type: none"> Curriculum review Khan overview & training Assessment & reporting "How to Manual" 	Q2 2019 – September 30, 2019
K-5 Technology & Engineering Project Orientation	<ul style="list-style-type: none"> Curriculum review code.org overview & training Assessment & reporting "How to Manual" 	Q2 2019 – September 30, 2019
6 – 8 Python & Robotics Project Orientation	<ul style="list-style-type: none"> Curriculum review Resource overview & training Assessment & reporting "How to Manual" 	Q2 2019 – September 30, 2019
Teacher Support Program Consultation	<ul style="list-style-type: none"> Implement teacher support program based on consultations Built in on-going evaluation Living strategy 	Q2 2019 – September 30, 2019
Infrastructure built	<ul style="list-style-type: none"> Hardware & software purchased Classroom resources purchased Other equipment & supplies 	Q2 2019 – September 30, 2019
9 – 12 STEM Implementation		
Summer Camp Co-op Readiness	<ul style="list-style-type: none"> Delivery of pre-requisites for 	Q2 2019 – September 30, 2019

reBOOT Canada training complete	<ul style="list-style-type: none"> co-op education reBOOT team trained 	Q1 2019 – June 30, 2019 Q2 2019 – September 30, 2019
Set up physical space	<ul style="list-style-type: none"> Summer student employment 	Q2 2019 – September 30, 2019
Student co-op program for reBOOT developed	<ul style="list-style-type: none"> SC Education Lead, SC Co-op & Business Coordinator, reBOOT Coordinator, reBOOT expert 	Q2 2019 – September 30, 2019
1 st Student cohort launched	<ul style="list-style-type: none"> Co-op program implemented 	Q2 2019 – September 30, 2019
Land-based Meet-up Function		
Forum set up	<ul style="list-style-type: none"> Training completed Infrastructure set up Policy & procedure completed 	Q2 2019 – September 30, 2019
Communication & work flow set up	<ul style="list-style-type: none"> Process for inter-department scheduling set up 	Q2 2019 – September 30, 2019
Aadsookaanan Reconstruction		
Research mythology	<ul style="list-style-type: none"> Complete & approved by Aadsookaanan Team 	Q2 2019 – September 30, 2019
Primary research	<ul style="list-style-type: none"> Resources identified Approved by Aadsookaanan Team 	Q2 2019 – September 30, 2019
Secondary research	<ul style="list-style-type: none"> Resources identified Approved by Aadsookaanan Team 	Q2 2019 – September 30, 2019
Database	<ul style="list-style-type: none"> Data base is up & running Procedures established 	Q2 2019 – September 30, 2019
WaaWaa Immersion		
Work flow & quality assurance	<ul style="list-style-type: none"> Production process from start to finish is laid out On-going evaluation built in 	Q2 2019 – September 30, 2019
Cloud file transfer system up	<ul style="list-style-type: none"> Agreement with PRDC (ISP) 	Q2 2019 – September 30, 2019
WaaWaa Immersion Video Production	<ul style="list-style-type: none"> 40% video target Video off-loaded to server Production numbers recorded 	Q2 2019 – September 30, 2019
Nishnaabemwin		
Work flow set up	<ul style="list-style-type: none"> Coordinated with Immersion Lead 	Q2 2019 – September 30, 2019
Immersion Instruction Education Framework Part I	<ul style="list-style-type: none"> Collaboration with Immersion Lead 	Q2 2019 – September 30, 2019
Biigtigong Nishnaabemwin Support	<ul style="list-style-type: none"> Community language resource bank set up 	Q2 2019 – September 30, 2019
Aadsookaanan Translation	<ul style="list-style-type: none"> Provide on-going translation services for Aadsookaanan 	Q2 2019 – September 30, 2019
Engagement		
Parent Engagement	<ul style="list-style-type: none"> Education Committee update Bi-monthly video report STEM roll-out event reBOOT roll-out event Land-based roll-out event Launch Parent-Student CompTIA A+ 1st cohort group 	Q1 2019 – June 30, 2019 Q2 2019 – September 30, 2019
Elders Engagement	<ul style="list-style-type: none"> Host Elders gathering Bi-monthly video report Program roll-out events Aadsookaanan meeting 	Q1 2019 – June 30, 2019 Q2 2019 – September 30, 2019
Youth Engagement	<ul style="list-style-type: none"> Youth appointed to SC Executive Board Program roll-out events Bi-monthly video report 	Q1 2019 – June 30, 2019 Q2 2019 – September 30, 2019
Community Engagement (off and on reserve)	<ul style="list-style-type: none"> Bi-monthly video report Program roll-out events 	Q2 2019 – September 30, 2019
Leadership Engagement	<ul style="list-style-type: none"> Joint meeting with Chief & Council, Senior Management & SC Executive Board 	Q1 2019 – June 30, 2019
Engagement Participation Log	<ul style="list-style-type: none"> Central reporting system in place 	Q2 2019 – September 30, 2019
Professional Development - Training		
Education Staff	<ul style="list-style-type: none"> Growth Mind Set Blended Learning Models Implementing code.org, python 1 and robotics 	Q1 2019 – June 30, 2019 Q2 2019 – September 30, 2019
High School Program Team	<ul style="list-style-type: none"> reBOOT Ministry of Education & Biigtigong Education co-op education Growth Mind Set 	Q1 2019 – June 30, 2019 Q2 2019 – September 30, 2019
BiigtigongX Team	<ul style="list-style-type: none"> Open edX 	Q1 2019 – June 30, 2019

	<ul style="list-style-type: none"> Course development Growth Mind Set 	Q2 2019 – September 30, 2019
Immersion Team	<ul style="list-style-type: none"> Growth Mind Set Immersion Instruction 	Q2 2019 – September 30, 2019
SC Executive Board	<ul style="list-style-type: none"> Board policies & procedures Board development 	Q2 2019 – September 30, 2019
Aadsookaanan Team	<ul style="list-style-type: none"> Oral tradition & storytelling 	Q1 2019 – June 30, 2019
Aadsookaanan Reconstruction	<ul style="list-style-type: none"> Cultural Anthropology Data 	Q1 2019 – June 30, 2019

Fiscal Year 1: Milestones Second Half

Q3 2019 -- October 1, 2019 to December 31, 2019 & Q4 2020 -- January 1, 2020 to March 31, 2020

Milestone	Description	Date
Governance		
SC Executive Board	<ul style="list-style-type: none"> Regular meetings Program review, evaluation & recommendations Reporting systems defined 	Q3 2019 – December 31, 2019 Q4 2020 – March 31, 2020
Aadsookaanan Team	<ul style="list-style-type: none"> Regular meetings Approved core aadsookaanan Held a community event 	Q3 2019 – December 31, 2019 Q4 2020 – March 31, 2020
Clan Engagement Team	<ul style="list-style-type: none"> Terms of Reference set Cultural Protocols set Clan Meetings Held Engagement Plan Set 	Q3 2019 – December 31, 2019 Q4 2020 – March 31, 2020
Management	<ul style="list-style-type: none"> Finance/HR policy & procedures implementation Finance/other reports to community & stakeholders Financial Statements prepared New budgets – work plans Strategy Review & Planning Risk Analysis How to Manual Instruction 	Q3 2019 – December 31, 2019 Q4 2020 – March 31, 2020
BiigtigongX	<ul style="list-style-type: none"> Develop BiigtigongX course standards & template BiigtigongX public launch Appsembler management 	Q3 2019 – December 31, 2019 Q4 2020 – March 31, 2020
K - 8 STEM Implementation		
K – 8 Math & Science on-line Enhancement Implementation	<ul style="list-style-type: none"> Implement Blended Learning with Khan Academy 70% completion (School year 1) Evaluation & assessment “How to Manual” 	Q3 2019 – December 31, 2019 Q4 2020 – March 31, 2020
K-5 Technology & Engineering Curriculum Implementation	<ul style="list-style-type: none"> Implement code.org 70% completion (School year 1) Assessment & reporting “How to Manual” 	Q3 2019 – December 31, 2019 Q4 2020 – March 31, 2020
6 – 8 Python & Robotics Implementation	<ul style="list-style-type: none"> Implement Python 1 Implement Robotics 1 70% completion (School year 1) Assessment & reporting “How to Manual” 	Q3 2019 – December 31, 2019 Q4 2020 – March 31, 2020
Teacher Support Program Consultation	<ul style="list-style-type: none"> Implement teacher support program based on consultations Built in on-going evaluation Living strategy 	Q3 2019 – December 31, 2019 Q4 2020 – March 31, 2020
Mid-year Evaluation Report	<ul style="list-style-type: none"> Formal review process Recommendations & adaptations made 	Q3 2019 – December 31, 2019 Q4 2020 – March 31, 2020
K - 12 STEM Implementation		
Summer Camp Co-op Readiness	<ul style="list-style-type: none"> Evaluation of pre-requisites for co-op education 	Q3 2019 – December 31, 2019
reBOOT co-op program implemented	<ul style="list-style-type: none"> 70% complete (School year 1) Assessment & Evaluation 	Q3 2019 – December 31, 2019 Q4 2020 – March 31, 2020
reBOOT Business Activities Complete	<ul style="list-style-type: none"> Business Plan Feasibility Work Marketing 	Q3 2019 – December 31, 2019

	<ul style="list-style-type: none"> Finances 	
reBOOT Tech Centre Open	<ul style="list-style-type: none"> Open For Business 	Q3 2019 – December 31, 2019
CompTIA A+	<ul style="list-style-type: none"> Courses Developed Co-op Policy Developed Co-op placements Secured Stakeholder Consultation Administration Tasks doe 	Q3 2019 – December 31, 2019 Q4 2020 – March 31, 2020
Land-based Meet-up Function		
Seasonal Schedule Developed	<ul style="list-style-type: none"> Coordination with Partners Fall and Winter Events 	Q3 2019 – December 31, 2019
Forum Launched	<ul style="list-style-type: none"> Community education Feedback & Evaluation 	Q3 2019 – December 31, 2019 Q4 2020 – March 31, 2020
User Report	<ul style="list-style-type: none"> Fall and Winter Usage Recommendations 	Q4 2020 – March 31, 2020
Aadsookaanan Reconstruction		
Aadsookaanan Character Map	<ul style="list-style-type: none"> Completed and approved by Aadsookaanan Team 	Q3 2019 – December 31, 2019
Primary research	<ul style="list-style-type: none"> 100% completed & approved by Aadsookaanan Team 	Q3 2019 – December 31, 2019
Secondary research	<ul style="list-style-type: none"> 60% completed & approved by Aadsookaanan Team 	Q3 2019 – December 31, 2019 Q4 2020 – March 31, 2020
Core Aadsookaanan	<ul style="list-style-type: none"> Approved by Aadsookaanan Team 50% complete 	Q3 2019 – December 31, 2019 Q4 2020 – March 31, 2020
Database	<ul style="list-style-type: none"> Data base is updated Backed up 	Q3 2019 – December 31, 2019 Q4 2020 – March 31, 2020
WaaWaa Immersion		
Immersion Instruction – “How To Manual” Part 1 complete	<ul style="list-style-type: none"> WaaWaa Immersion Best practices identified & documented 	Q3 2019 – December 31, 2019 Q4 2020 – March 31, 2020
WaaWaa Immersion Video produced	<ul style="list-style-type: none"> Video produced & reviewed Video off-loaded to server Production numbers recorded 100% complete annual target 	Q3 2019 – December 31, 2019 Q4 2020 – March 31, 2020
Nishnaabemwin		
Bilingual STEM Video	<ul style="list-style-type: none"> Video style options Work flow identified 	Q3 2019 – December 31, 2019
Database	<ul style="list-style-type: none"> Database of resources set up 	Q3 2019 – December 31, 2019
Aadsookaanan Translation	<ul style="list-style-type: none"> Provide on-going translation services for Aadsookaanan 	Q3 2019 – December 31, 2019 Q4 2020 – March 31, 2020
Engagement Strategy		
Parent Engagement	<ul style="list-style-type: none"> Education Committee update Bi-monthly video report 	Q3 2019 – December 31, 2019 Q4 2020 – March 31, 2020
Elders Engagement	<ul style="list-style-type: none"> Bi-monthly video report Elders gathering Aadsookaanan meeting 	Q3 2019 – December 31, 2019 Q4 2020 – March 31, 2020
Youth Engagement	<ul style="list-style-type: none"> Youth Council & Executive Board Youth Strategy Bi-monthly video report Pop-Up Session 	Q3 2019 – December 31, 2019 Q4 2020 – March 31, 2020
Community Engagement (off and on reserve)	<ul style="list-style-type: none"> Bi-monthly video report Community meeting Off-reserve meeting Live-stream meetings 	Q3 2019 – December 31, 2019 Q4 2020 – March 31, 2020
Leadership Engagement	<ul style="list-style-type: none"> Executive Board Council & SMT representatives to provide updates to Council & SMT 	Q3 2019 – December 31, 2019 Q4 2020 – March 31, 2020
Engagement Participation Log	<ul style="list-style-type: none"> Participation Report 	Q3 2019 – December 31, 2019 Q4 2020 – March 31, 2020
Professional Development - Training		
Education Staff	<ul style="list-style-type: none"> Blended Learning Models Implementing code.org, python 1 and robotics 	Q3 2019 – December 31, 2019 Q4 2020 – March 31, 2020
High School Program Team	<ul style="list-style-type: none"> CompTIA A+ Curriculum Ministry of Education & Biigtigong Education co-op education 	Q3 2019 – December 31, 2019 Q4 2020 – March 31, 2020
BiigtigongX Team	<ul style="list-style-type: none"> Open edX On-line technology 	Q3 2019 – December 31, 2019 Q4 2020 – March 31, 2020

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Immersion Team	<ul style="list-style-type: none"> • Storytelling • Clan teachings • Immersion Instruction 	Q3 2019 – December 31, 2019 Q4 2020 – March 31, 2020
SC Executive Board	<ul style="list-style-type: none"> • Board policies & procedures • Board development 	Q4 2020 – March 31, 2020
Aadsookaanan Team	<ul style="list-style-type: none"> • Oral tradition & storytelling 	Q3 2019 – December 31, 2019 Q4 2020 – March 31, 2020
Clan Engagement Team	<ul style="list-style-type: none"> • Traditional clan teachings 	Q4 2020 – March 31, 2020
Aadsookaanan Reconstruction	<ul style="list-style-type: none"> • Cultural Anthropology Data 	Q4 2020 – March 31, 2020

Fiscal Year 2: Milestones First Half

Q1 2020 -- April 1, 2020 to June 30, 2020 & **Q2 2020** -- July 1, 2020 to September 30, 2020

Milestone Area	Milestone Description	Completion Date
Governance		
SC Executive Board	<ul style="list-style-type: none"> Regular Meetings held Strategy Review Program review, evaluation & recommendations 	Q1 – June 30, 2020 Q2 – September 30, 2020
Aadsookaanan Team	<ul style="list-style-type: none"> Regular meetings Approve core aadsookaanan Held a community event Participate in training & held application discussion 	Q1 – June 30, 2020 Q2 – September 30, 2020
Clan Engagement Team	<ul style="list-style-type: none"> All Clan Gathering Regular Team meetings Traditional Clan Teachings Academic presentation 	Q1 – June 30, 2020 Q2 – September 30, 2020
Management	<ul style="list-style-type: none"> Finance/HR management Finance/other reports to stakeholders Evaluation Framework Clan Engagement Review Team Development Strategy 	Q1 – June 30, 2020 Q2 – September 30, 2020
BiigtigongX	<ul style="list-style-type: none"> Develop BiigtigongX courses Appsembler management 	Q1 – June 30, 2020 Q2 – September 30, 2020
K - 8 STEM Implementation		
K – 8 Math & Science on-line Enhancement	<ul style="list-style-type: none"> Khan Academy 100% (year 1) Assessment & reporting Growth Mind Set implemented End of School Year Report & Evaluation Implement Year 2 	Q1 – June 30, 2020 Q2 – September 30, 2020
K-5 Technology & Engineering Project	<ul style="list-style-type: none"> code.org implemented 100% (School Year 1) Assessment & reporting End of School Year I Report & Evaluation Implement Year 2 	Q1 – June 30, 2020 Q2 – September 30, 2020
6 – 8 Python & Robotics Project	<ul style="list-style-type: none"> Python 1 -100% (School Year 1) Robotics1-100% (School Year 1) Assessment & reporting End of School Year I Report & Evaluation Implement Year 2 	Q1 – June 30, 2020 Q2 – September 30, 2020
Teacher Support Program	<ul style="list-style-type: none"> Implement teacher support program based on consultations Built in on-going evaluation Living strategy 	Q1 – June 30, 2020 Q2 – September 30, 2020
9 – 12 STEM Implementation		
reBOOT co-op	<ul style="list-style-type: none"> Graduation 1st cohort Evaluation Report 2nd cohort launched 	Q1 – June 30, 2020 Q2 – September 30, 2020
CompTIA A+	<ul style="list-style-type: none"> Summer Co-op prerequisite for 2020 Grade 8 graduates 	Q1 – June 30, 2020
CompTIA A+	<ul style="list-style-type: none"> Core 1 (#220-1001) 1st half launch Course & Co-op education 	Q2 – September 30, 2020
Land-based Meet-up Function		
Forum set up	<ul style="list-style-type: none"> Training completed Infrastructure set up Policy & procedure completed 	Q1 – June 30, 2020 Q2 – September 30, 2020
Communication & work flow set up	<ul style="list-style-type: none"> Process for inter-department scheduling set up 	Q2 – September 30, 2020
Aadsookaanan Reconstruction		
Core Aadsookaanan	<ul style="list-style-type: none"> 80% complete 	Q1 – June 30, 2020 Q2 – September 30, 2020
Primary research	<ul style="list-style-type: none"> Oral History Research Project Framework complete 	Q1 – June 30, 2020 Q2 – September 30, 2020
Secondary research	<ul style="list-style-type: none"> 80% complete and approved by Aadsookaanan Team 	Q1 – June 30, 2020 Q2 – September 30, 2020
Database	<ul style="list-style-type: none"> Data base 	Q1 – June 30, 2020 Q2 – September 30, 2020

WaaWaa Immersion		
Work flow & Quality Assurance	• Monitoring & Evaluation reports complete	Q2 – September 30, 2020
WaaWaa Immersion Video Production	• 50% video target produced • Video off-loaded to server • Production numbers recorded	Q1 – June 30, 2020 Q2 – September 30, 2020
Nishnaabemwin		
Bilingual STEM Video	• 100% of target video for period	Q1 – June 30, 2020 Q2 – September 30, 2020
Nishnaabemwin Overdub Video	• 100% of target video for period	Q1 – June 30, 2020 Q2 – September 30, 2020
Aadsookaanan Translation	• Translations completed	Q1 – June 30, 2020 Q2 – September 30, 2020
Nishnaabemwin Immersion Video	• K-8 classroom implementation	September 2020
Engagement		
Parent Engagement	• Education Committee update • Bi-monthly video report	Q1 – June 30, 2020 Q2 – September 30, 2020
Elders Engagement	• Bi-monthly video report • Elders gathering • Aadsookaanan meeting	Q1 – June 30, 2020 Q2 – September 30, 2020
Youth Engagement	• Youth Council & Executive Board Youth Strategy • Bi-monthly video report • Pop-Up Session	Q1 – June 30, 2020 Q2 – September 30, 2020
Community Engagement (off and on reserve)	• Bi-monthly video report • Community meeting • Off-reserve meeting • Live-stream meetings	Q1 – June 30, 2020 Q2 – September 30, 2020
Leadership Engagement	• Executive Board Council & SMT representatives to provide updates to Council & SMT	Q1 – June 30, 2020 Q2 – September 30, 2020
Engagement Participation Log	• Participation Report	Q1 – June 30, 2020 Q2 – September 30, 2020
Professional Development - Training		
Education Staff	• Growth Mind Set • Blended Learning Models • Implementing code.org, python 1 and robotics • Immersion Implementation	Q1 – June 30, 2020 Q2 – September 30, 2020
High School Program Team	• Evaluation	Q2 – September 30, 2020
BiigtigongX Team	• Open edX • Course development	Q1 – June 30, 2020 Q2 – September 30, 2020
Immersion Team	• Storytelling	Q2 – September 30, 2020
SC Executive Board	• Board development	Q2 – September 30, 2020
Aadsookaanan Team	• Oral tradition & storytelling	Q1 – June 30, 2020
Clan Engagement Team	• Traditional clan teachings • Facilitating gatherings	Q1 – June 30, 2020 Q2 – September 30, 2020
Aadsookaanan Reconstruction	• Cultural Anthropology Data	Q1 – June 30, 2020

Fiscal Year 2: Milestones Second Half

Q3 2020 -- October 1, 2020 to December 31, 2020 & Q4 2021 -- January 1, 2021 to March 31, 2021

Milestone	Description	Date
Governance		
SC Executive Board	• Regular Meetings held • Strategy Review • Program review, evaluation & recommendations	Q3 - December 31, 2020 Q4 - March 31, 2021
Aadsookaanan Team	• Regular meetings • Approve core aadsookaanan • Held a community event • Participate in training & held application discussion	Q3 - December 31, 2020 Q4 - March 31, 2021
Clan Engagement Team	• All Clan Gathering • Regular Team meetings • Traditional Clan Teachings • Academic presentation	Q3 - December 31, 2020 Q4 - March 31, 2021

Management	<ul style="list-style-type: none"> Finance/HR management Finance/other reports to stakeholders Budgets Financial Statements Annual Report Outcomes report Partnership review Data management review 	Q3 - December 31, 2020 Q4 - March 31, 2021
BiigtigongX	<ul style="list-style-type: none"> Provide developer training BiigtigongX and Appsembler management Analytics review 	Q3 - December 31, 2020 Q4 - March 31, 2021
K - 8 STEM Implementation		
K – 8 Math & Science on-line Enhancement	<ul style="list-style-type: none"> Khan Academy 70% (year 2) Assessment & reporting Growth Mind Set implemented Mid-year Report & Evaluation 	Q3 - December 31, 2020 Q4 - March 31, 2021
K-5 Technology & Engineering Project	<ul style="list-style-type: none"> code.org implemented 70% (School Year 2) Assessment & reporting Mid year Report & Evaluation 	Q3 - December 31, 2020 Q4 - March 31, 2021
6 – 8 Python & Robotics Project	<ul style="list-style-type: none"> Python 1 -70% (School Year 2) Robotics1-70% (School Year 2) Assessment & reporting Mid year Report & Evaluation 	Q3 - December 31, 2020 Q4 - March 31, 2021
Teacher Support Program	<ul style="list-style-type: none"> Implement teacher support program Built in on-going evaluation Living strategy 	Q3 - December 31, 2020 Q4 - March 31, 2021
9 – 12 STEM Implementation		
Summer Camp Co-op Readiness	<ul style="list-style-type: none"> Evaluation of pre-requisites for Co-op education 	October 1, 2020 to December 31, 2020
reBOOT co-op	<ul style="list-style-type: none"> 70% reBOOT complete (Cohort 2) 	Q3 - December 31, 2020 Q4 - March 31, 2021
CompTIA A+	<ul style="list-style-type: none"> Core 1 (#220-1001) 1st half 70% complete (Cohort 1) Co-op education 70% complete (Cohort 1) 	Q3 - December 31, 2020 Q4 - March 31, 2021
Land-based Meet-up Function		
Forum	<ul style="list-style-type: none"> Monthly activities reports Discussions 	Q3 - December 31, 2020 Q4 - March 31, 2021
Land-based Activities	<ul style="list-style-type: none"> Seasonal events completed Monitoring report 	Q3 - December 31, 2020 Q4 - March 31, 2021
Aadsookaanan Reconstruction		
Core Aadsookaanan	<ul style="list-style-type: none"> 100% complete 	Q3 - December 31, 2020 Q4 - March 31, 2021
Primary research	<ul style="list-style-type: none"> Oral History project launch 	
Secondary research	<ul style="list-style-type: none"> 100% complete & approved by Aadsookaanan Team 	Q3 - December 31, 2020 Q4 - March 31, 2021
Database	<ul style="list-style-type: none"> Data base maintained 	Q3 - December 31, 2020 Q4 - March 31, 2021
WaaWaa Immersion		
Work flow & Quality Assurance	<ul style="list-style-type: none"> On-going review & evaluation reports 	Q3 - December 31, 2020 Q4 - March 31, 2021
WaaWaa Immersion Video	<ul style="list-style-type: none"> 100% video target complete Core Aadsookaanan Video Aadsookaanan Support Video 	Q3 - December 31, 2020 Q4 - March 31, 2021
Nishnaabemwin		
Bilingual STEM Video	<ul style="list-style-type: none"> 100% of target video for period 	Q3 - December 31, 2020 Q4 - March 31, 2021
Nishnaabemwin Overdub Video	<ul style="list-style-type: none"> 100% of target video for period 	Q3 - December 31, 2020 Q4 - March 31, 2021
Aadsookaanan Translation	<ul style="list-style-type: none"> Translations completed 	Q3 - December 31, 2020 Q4 - March 31, 2021
Nishnaabemwin Immersion Video	<ul style="list-style-type: none"> K-8 classroom implementation September 2020 	Q3 - December 31, 2020 Q4 - March 31, 2021
Engagement		
Parent Engagement	<ul style="list-style-type: none"> Education Committee update 	Q3 - December 31, 2020

	<ul style="list-style-type: none"> • Bi-monthly video report • 	Q4 - March 31, 2021
Elders Engagement	<ul style="list-style-type: none"> • Bi-monthly video report • Elders gathering • Aadsookaanan meeting 	Q3 - December 31, 2020 Q4 - March 31, 2021
Youth Engagement	<ul style="list-style-type: none"> • Youth Council & Executive Board Youth Strategy • Bi-monthly video report • Pop-Up Session 	Q3 - December 31, 2020 Q4 - March 31, 2021
Community Engagement (off and on reserve)	<ul style="list-style-type: none"> • Bi-monthly video report • Community meeting • Off-reserve meeting • Live-stream meetings 	Q3 - December 31, 2020 Q4 - March 31, 2021
Leadership Engagement	<ul style="list-style-type: none"> • Executive Board Council & SMT representatives to provide updates to Council & SMT 	Q3 - December 31, 2020 Q4 - March 31, 2021
Engagement Participation Log	<ul style="list-style-type: none"> • Participation Report 	Q3 - December 31, 2020 Q4 - March 31, 2021
Professional Development - Training		
Education Staff	<ul style="list-style-type: none"> • Blended Learning Models • Implementing code.org, python 1 and robotics • Immersion Implementation 	Q3 - December 31, 2020 Q4 - March 31, 2021
High School Program Team	<ul style="list-style-type: none"> • Evaluation 	Q4 - March 31, 2021
BiigtigongX Team	<ul style="list-style-type: none"> • Open edX • On-line education technology 	Q3 - December 31, 2020 Q4 - March 31, 2021
Immersion Team	<ul style="list-style-type: none"> • Storytelling • Immersion Instruction 	Q4 - March 31, 2021
SC Executive Board	<ul style="list-style-type: none"> • Board policies & procedures • Board development 	Q3 - December 31, 2020 Q4 - March 31, 2021
Aadsookaanan Team	<ul style="list-style-type: none"> • Oral tradition & storytelling 	Q4 - March 31, 2021
Clan Engagement Team	<ul style="list-style-type: none"> • Traditional clan teachings • Dispute Resolution 	Q3 - December 31, 2020 Q4 - March 31, 2021
Aadsookaanan Reconstruction	<ul style="list-style-type: none"> • Cultural Anthropology Data 	Q3 - December 31, 2020 Q4 - March 31, 2021

Fiscal Year 3: Milestones First Half

Q1 2021 -- April 1, 2021 to June 30, 2021 & Q2 2021-- July 1, 2021 to September 30, 2021

Milestone Area	Milestone Description	Completion Date
Governance		
SC Executive Board	<ul style="list-style-type: none"> Regular Meetings held Annual Meeting Strategy Review Program review, evaluation & recommendations 	Q1 - June 30, 2021 Q2 - September 30, 2021
Aadsookaanan Team	<ul style="list-style-type: none"> Regular meetings Prepare for Winter Stories 	Q1 - June 30, 2021 Q2 - September 30, 2021
Clan Engagement Team	<ul style="list-style-type: none"> All Clan Gathering Regular Team meetings Traditional Clan Teachings Academic presentation 	Q1 - June 30, 2021 Q2 - September 30, 2021
Management	<ul style="list-style-type: none"> Finance/HR management Finance/other reports to stakeholders Aadsookaanan Related Consultation Evaluation Framework Clan Engagement Reports Team Development Strategy Annual Meeting Coordinate Training 	Q1 - June 30, 2021 Q2 - September 30, 2021
BiigtigongX	<ul style="list-style-type: none"> Review & Evaluation Appsembler management 	Q1 - June 30, 2021 Q2 - September 30, 2021
K - 8 STEM Implementation		
K - 8 Math & Science on-line Enhancement	<ul style="list-style-type: none"> Khan Academy 100% (Year 2) Assessment & reporting Growth Mind Set implemented End of School Year Report & Evaluation Implement Year 3 	Q1 - June 30, 2021 Q2 - September 30, 2021
K-5 Technology & Engineering Project	<ul style="list-style-type: none"> code.org implemented 100% (School Year 2) Assessment & reporting End of School Year 1 Report & Evaluation Implement Year 3 	Q1 - June 30, 2021 Q2 - September 30, 2021
6 - 8 Python & Robotics Project	<ul style="list-style-type: none"> Python 1 -100% (School Year 2) Robotics1-100% (School Year 2) Assessment & reporting End of School Year 2 Report & Evaluation Implement Year 3 	Q1 - June 30, 2021 Q2 - September 30, 2021
Teacher Support Program	<ul style="list-style-type: none"> Implement teacher support program based on consultations Built in on-going evaluation Living strategy 	Q1 - June 30, 2021 Q2 - September 30, 2021
9 - 12 STEM Implementation		
reBOOT co-op	<ul style="list-style-type: none"> Graduation 2nd cohort Evaluation Report 3rd cohort launched 	Q1 - June 30, 2021 Q2 - September 30, 2021
CompTIA A+	<ul style="list-style-type: none"> Summer Co-op prerequisite for 2020 Grade 8 graduates 	Q2 - September 30, 2021
CompTIA A+	<ul style="list-style-type: none"> Core 1 (#220-1001) 1st half 100% - group 1 Course & Co-op education Launch group 2 	Q1 - June 30, 2021 Q2 - September 30, 2021
CompTIA A+	<ul style="list-style-type: none"> Core 1(#220-1001) 2nd half launch - group 1 Course & Co-op education 	Q2 - September 30, 2021
Land-based Meet-up Function		
Forum	<ul style="list-style-type: none"> Monthly discussions 	Q1 - June 30, 2021 Q2 - September 30, 2021
Land-based activities	<ul style="list-style-type: none"> Seasonal activities 	Q1 - June 30, 2021 Q2 - September 30, 2021
Aadsookaanan Reconstruction		
Primary research	<ul style="list-style-type: none"> Oral History Research Phase 1 launched 	Q1 - June 30, 2021

Aadsookaanan Application	• Rites of Passage	Q2 - September 30, 2021
Database	• Data base	Q1 - June 30, 2021 Q2 - September 30, 2021
WaaWaa Immersion		
Work flow & Quality Assurance	• Monitoring & Evaluation reports complete	Q1 - June 30, 2021 Q2 - September 30, 2021
WaaWaa Immersion Video Production	• 50% video target produced • Video off-loaded to server • Production numbers recorded	Q1 - June 30, 2021 Q2 - September 30, 2021
Nishnaabemwin		
Bilingual STEM Video	• 100% of target video for period	Q1 - June 30, 2021 Q2 - September 30, 2021
Nishnaabemwin Overdub Video	• 100% of target video for period	Q1 - June 30, 2021 Q2 - September 30, 2021
Aadsookaanan Translation	• Translations completed	Q1 - June 30, 2021 Q2 - September 30, 2021
Nishnaabemwin Immersion Video	• K-8 classroom implementation	September 2020
Engagement		
Parent Engagement	• Education Committee update • Bi-monthly video report	Q1 - June 30, 2021 Q2 - September 30, 2021
Elders Engagement	• Bi-monthly video report • Elders gathering • Aadsookaanan meeting	Q1 - June 30, 2021 Q2 - September 30, 2021
Youth Engagement	• Youth Council & Executive Board Youth Strategy • Bi-monthly video report • Pop-Up Session	Q1 - June 30, 2021 Q2 - September 30, 2021
Community Engagement (off and on reserve)	• Bi-monthly video report • Community meeting • Off-reserve meeting • Live-stream meetings	Q1 - June 30, 2021 Q2 - September 30, 2021
Leadership Engagement	• Executive Board Council & SMT representatives to provide updates to Council & SMT	Q1 - June 30, 2021 Q2 - September 30, 2021
Engagement Participation Log	• Participation Report	Q1 - June 30, 2021 Q2 - September 30, 2021
Professional Development - Training		
Education Staff	• code.org, python I and robotics • Immersion Implementation	Q1 - June 30, 2021 Q2 - September 30, 2021
High School Program Team	• Open edX course development	Q1 - June 30, 2021
BiigtigongX Team	• Open edX • On-line education technology	Q1 - June 30, 2021 Q2 - September 30, 2021
Immersion Team	• Assessment – Q & A	Q1 - June 30, 2021
SC Executive Board	• Board development	Q1 - June 30, 2021
Aadsookaanan Team	• Rites of Passage	Q2 - September 30, 2021
Clan Engagement Team	• Traditional clan teachings • Rites of Passage	Q1 - June 30, 2021 Q2 - September 30, 2021
Aadsookaanan Reconstruction	• Social systems, Rites of Passage	Q2 - September 30, 2021

Fiscal Year 3: Milestones Second Half

Q3 2021 -- October 1, 2021 to December 31, 2021 & Q4 2022 -- January 1, 2022 to March 31, 2022

Milestone	Description	Date
Governance		
SC Executive Board	• Regular Meetings held • Strategy Review • Program review, evaluation & recommendations	Q3 - December 31, 2021 Q4 - March 31, 2022
Aadsookaanan Team	• Regular meetings • Approve core aadsookaanan • Held a community event • Participate in training & held application discussion	Q3 - December 31, 2021 Q4 - March 31, 2022
Clan Engagement Team	• All Clan Gathering • Regular Team meetings • Traditional Clan Teachings • Academic presentation	Q3 - December 31, 2021 Q4 - March 31, 2022

Management	<ul style="list-style-type: none"> Finance/HR management Finance/other reports to stakeholders Budgets Financial Statements Annual Report Outcomes report Partnership review Data management review 	Q3 - December 31, 2021 Q4 - March 31, 2022
BiigtigongX	<ul style="list-style-type: none"> Provide developer training BiigtigongX and Appsembler management Analytics review 	Q3 - December 31, 2021 Q4 - March 31, 2022
K - 8 STEM Implementation		
K – 8 Math & Science on-line Enhancement	<ul style="list-style-type: none"> Khan Academy 70% Assessment & reporting Growth Mind Set implemented Mid-year Report & Evaluation 	Q3 - December 31, 2021 Q4 - March 31, 2022
K-5 Technology & Engineering Project	<ul style="list-style-type: none"> code.org implemented 70% (School Year 3) Assessment & reporting Mid year Report & Evaluation 	Q3 - December 31, 2021 Q4 - March 31, 2022
6 – 8 Python & Robotics Project	<ul style="list-style-type: none"> Python 1 -70% (School Year 3) Robotics1-70% (School Year 3) Assessment & reporting Mid year Report & Evaluation 	Q3 - December 31, 2021 Q4 - March 31, 2022
Teacher Support Program	<ul style="list-style-type: none"> Implement teacher support program Built in on-going evaluation Living strategy 	Q3 - December 31, 2021 Q4 - March 31, 2022
9 – 12 STEM Implementation		
reBOOT co-op	<ul style="list-style-type: none"> 70% reBOOT complete (Cohort 3) 	Q3 - December 31, 2021 Q4 - March 31, 2022
CompTIA A+	<ul style="list-style-type: none"> Evaluation of pre-requisites for Co-op education 	Q3 - December 31, 2021
CompTIA A+	<ul style="list-style-type: none"> Core 1 (#220-1001) – 1st half 70% complete (Group 2) Co-op education 70% complete (Group 2) 	Q3 - December 31, 2021 Q4 - March 31, 2022
CompTIA A+	<ul style="list-style-type: none"> Core 1(#220-1001) 2nd half 70% complete (Group1) Course & Co-op education 	Q3 - December 31, 2021 Q4 - March 31, 2022
Land-based Meet-up Function		
Forum	<ul style="list-style-type: none"> Monthly activities reports Discussions 	Q3 - December 31, 2021 Q4 - March 31, 2022
Land-based Activities	<ul style="list-style-type: none"> Seasonal events completed Monitoring report 	Q3 - December 31, 2021 Q4 - March 31, 2022
Aadsookaanan Reconstruction		
Aadsookaanan Application	<ul style="list-style-type: none"> Rites of Passage 	Q3 - December 31, 2021 Q4 - March 31, 2022
Primary research	<ul style="list-style-type: none"> Oral History Phase 1 Report 	Q3 - December 31, 2021 Q4 - March 31, 2022
Database	<ul style="list-style-type: none"> Data base maintained 	Q3 - December 31, 2021 Q4 - March 31, 2022
WaaWaa Immersion		
Work flow & Quality Assurance	<ul style="list-style-type: none"> On-going review & evaluation reports 	Q3 - December 31, 2021 Q4 - March 31, 2022
WaaWaa Immersion Video	<ul style="list-style-type: none"> 100% video target complete Core Aadsookaanan Video Aadsookaanan Support Video 	Q3 - December 31, 2021 Q4 - March 31, 2022
Nishnaabemwin		
Bilingual STEM Video	<ul style="list-style-type: none"> 100% of target video for period 	Q3 - December 31, 2021 Q4 - March 31, 2022
Nishnaabemwin Overdub Video	<ul style="list-style-type: none"> 100% of target video for period 	Q3 - December 31, 2021 Q4 - March 31, 2022
Aadsookaanan Translation	<ul style="list-style-type: none"> Translations completed 	Q3 - December 31, 2021 Q4 - March 31, 2022
Nishnaabemwin Immersion Video	<ul style="list-style-type: none"> K-8 classroom implementation 	Q3 - December 31, 2021 Q4 - March 31, 2022
Engagement		

Parent Engagement	<ul style="list-style-type: none"> Education Committee update Bi-monthly video report 	Q3 - December 31, 2021 Q4 - March 31, 2022
Elders Engagement	<ul style="list-style-type: none"> Bi-monthly video report Elders gathering Aadsookaanan meeting 	Q3 - December 31, 2021 Q4 - March 31, 2022
Youth Engagement	<ul style="list-style-type: none"> Youth Council & Executive Board Youth Strategy Bi-monthly video report Pop-Up Session 	Q3 - December 31, 2021 Q4 - March 31, 2022
Community Engagement (off and on reserve)	<ul style="list-style-type: none"> Bi-monthly video report Community meeting Off-reserve meeting Live-stream meetings 	Q3 - December 31, 2021 Q4 - March 31, 2022
Leadership Engagement	<ul style="list-style-type: none"> Executive Board Council & SMT representatives to provide updates to Council & SMT 	Q3 - December 31, 2021 Q4 - March 31, 2022
Engagement Participation Log	<ul style="list-style-type: none"> Participation Report 	Q3 - December 31, 2021 Q4 - March 31, 2022
Professional Development - Training		
Education Staff	<ul style="list-style-type: none"> Blended Learning Models Implementing code.org, python 1 and robotics Immersion Implementation 	Q3 - December 31, 2021 Q4 - March 31, 2022
High School Program Team	<ul style="list-style-type: none"> Evaluation 	Q3 - December 31, 2021 Q4 - March 31, 2022
BiigtigongX Team	<ul style="list-style-type: none"> Open edX On-line education technology 	Q3 - December 31, 2021 Q4 - March 31, 2022
Immersion Team	<ul style="list-style-type: none"> Storytelling Immersion Instruction 	Q3 - December 31, 2021 Q4 - March 31, 2022
SC Executive Board	<ul style="list-style-type: none"> Board policies & procedures Board development 	Q3 - December 31, 2021 Q4 - March 31, 2022
Aadsookaanan Team	<ul style="list-style-type: none"> Oral tradition & storytelling 	Q3 - December 31, 2021 Q4 - March 31, 2022
Clan Engagement Team	<ul style="list-style-type: none"> Traditional clan teachings Dispute Resolution 	Q3 - December 31, 2021 Q4 - March 31, 2022
Aadsookaanan Reconstruction	<ul style="list-style-type: none"> Cultural Anthropology Data 	Q3 - December 31, 2021 Q4 - March 31, 2022

Fiscal Year 4: Milestones First Half

Q1 2022 -- April 1, 2022 to June 30, 2022 & Q2 2022 -- July 1, 2022 to September 30, 2022

Milestone Area	Milestone Description	Completion Date
Governance		
SC Executive Board	<ul style="list-style-type: none"> Regular Meetings held Strategy Review Program review, evaluation & recommendations 	Q1 - June 30, 2022 Q2 - September 30, 2022
Aadsookaanan Team	<ul style="list-style-type: none"> Regular meetings Approve core aadsookaanan Held a community event Participate in training & held application discussion 	Q1 - June 30, 2022 Q2 - September 30, 2022
Clan Engagement Team	<ul style="list-style-type: none"> All Clan Gathering Regular Team meetings Traditional Clan Teachings Academic presentation 	Q1 - June 30, 2022 Q2 - September 30, 2022
Management	<ul style="list-style-type: none"> Finance/HR management Finance/other reports to stakeholders Evaluation Framework Clan Engagement Review Team Development Strategy 	Q1 - June 30, 2022 Q2 - September 30, 2022
BiigtigongX	<ul style="list-style-type: none"> Develop BiigtigongX courses Appsembler management 	Q1 - June 30, 2022 Q2 - September 30, 2022
K - 8 STEM Implementation		
K - 8 Math & Science on-line Enhancement	<ul style="list-style-type: none"> Khan Academy 100% Assessment & reporting Growth Mind Set implemented End of School Year Report & Evaluation Implement Year 4 	Q1 - June 30, 2022 Q2 - September 30, 2022
K-5 Technology & Engineering Project	<ul style="list-style-type: none"> code.org implemented 100% (School Year 3) Assessment & reporting End of School Year 1 Report & Evaluation Implement Year 4 	Q1 - June 30, 2022 Q2 - September 30, 2022
6 - 8 Python & Robotics Project	<ul style="list-style-type: none"> Python 1 -100% (School Year 3) Robotics1-100% (School Year 3) Assessment & reporting End of School Year 1 Report & Evaluation Implement Year 4 	Q1 - June 30, 2022 Q2 - September 30, 2022
Teacher Support Program	<ul style="list-style-type: none"> Implement teacher support program based on consultations Built in on-going evaluation Living strategy 	Q1 - June 30, 2022 Q2 - September 30, 2022
9 - 12 STEM Implementation		
reBOOT co-op	<ul style="list-style-type: none"> Graduation 2nd cohort Evaluation Report 3rd cohort launched 	Q1 - June 30, 2022 Q2 - September 30, 2022
CompTIA A+	<ul style="list-style-type: none"> Summer Co-op prerequisite 	Q2 - September 30, 2022
CompTIA A+	<ul style="list-style-type: none"> Core 1 (#220-1001) - 1st half 100% complete (Group 2) Co-op education 100% complete (Group 2) Launch Group 3 	Q1 - June 30, 2022 Q2 - September 30, 2022
	<ul style="list-style-type: none"> Core 1(#220-1001) 2nd half 100% complete (Group 1) Course & Co-op education Launch Group 2 	Q1 - June 30, 2022 Q2 - September 30, 2022
Land-based Meet-up Function		
Forum	<ul style="list-style-type: none"> Monthly activities reports Discussions 	Q1 - June 30, 2022 Q2 - September 30, 2022
Land-based Activities	<ul style="list-style-type: none"> Seasonal events completed Monitoring report 	Q1 - June 30, 2022 Q2 - September 30, 2022
Aadsookaanan Reconstruction		
Aadsookaanan Application	<ul style="list-style-type: none"> Rites of Passage 	Q1 - June 30, 2022 Q2 - September 30, 2022

Primary research	<ul style="list-style-type: none"> Oral History Research Phase 2 	Q1 - June 30, 2022 Q2 - September 30, 2022
Database	<ul style="list-style-type: none"> Data base 	Q1 - June 30, 2022 Q2 - September 30, 2022
WaaWaa Immersion		
Work flow & Quality Assurance	<ul style="list-style-type: none"> Monitoring & Evaluation reports complete 	Q1 - June 30, 2022 Q2 - September 30, 2022
WaaWaa Immersion Video Production	<ul style="list-style-type: none"> 50% video target produced Video off-loaded to server Production numbers recorded 	Q1 - June 30, 2022 Q2 - September 30, 2022
Nishnaabemwin		
Bilingual STEM Video	<ul style="list-style-type: none"> 100% of target video for period 	Q1 - June 30, 2022 Q2 - September 30, 2022
Nishnaabemwin Overdub Video	<ul style="list-style-type: none"> 100% of target video for period 	Q1 - June 30, 2022 Q2 - September 30, 2022
Aadsookaanan Translation	<ul style="list-style-type: none"> Translations completed 	Q1 - June 30, 2022 Q2 - September 30, 2022
Nishnaabemwin Immersion Video	<ul style="list-style-type: none"> K-8 classroom implementation 	September 2020
Engagement		
Parent Engagement	<ul style="list-style-type: none"> Education Committee update Bi-monthly video report In-school systems 	Q1 - June 30, 2022 Q2 - September 30, 2022
Elders Engagement	<ul style="list-style-type: none"> Bi-monthly video report Elders gathering Aadsookaanan meeting 	Q1 - June 30, 2022 Q2 - September 30, 2022
Youth Engagement	<ul style="list-style-type: none"> Youth Council & Executive Board Youth Strategy Bi-monthly video report Pop-Up Session 	Q1 - June 30, 2022 Q2 - September 30, 2022
Community Engagement (off and on reserve)	<ul style="list-style-type: none"> Bi-monthly video report Community meeting Off-reserve meeting Live-stream meetings 	Q1 - June 30, 2022 Q2 - September 30, 2022
Leadership Engagement	<ul style="list-style-type: none"> Executive Board Council & SMT representatives to provide updates to Council & SMT 	Q1 - June 30, 2022 Q2 - September 30, 2022
Engagement Participation Log	<ul style="list-style-type: none"> Participation Report 	Q1 - June 30, 2022 Q2 - September 30, 2022
Professional Development - Training		
Education Staff	<ul style="list-style-type: none"> Blended Learning Models Implementing code.org, python 1 and robotics Immersion Assessment 	Q1 - June 30, 2022 Q2 - September 30, 2022
High School Program Team	<ul style="list-style-type: none"> Evaluating on-line tools 	Q1 - June 30, 2022
BiigtigongX Team	<ul style="list-style-type: none"> Open edX On-line technology 	Q1 - June 30, 2022 Q2 - September 30, 2022
Immersion Team	<ul style="list-style-type: none"> Assessment 	Q2 - September 30, 2022
SC Executive Board	<ul style="list-style-type: none"> Board development 	Q1 - June 30, 2022 Q2 - September 30, 2022
Aadsookaanan Team	<ul style="list-style-type: none"> Rites of Passage 	Q2 - September 30, 2022
Clan Engagement Team	<ul style="list-style-type: none"> Traditional clan teachings Leadership 	Q1 - June 30, 2022 Q2 - September 30, 2022
Aadsookaanan Reconstruction	<ul style="list-style-type: none"> Cultural Anthropology Data 	Q2 - September 30, 2022

Fiscal Year 4: Milestones Second Half

Q3 2022 -- October 1, 2022 to December 31, 2022 & Q4 2023 -- January 1, 2023 to March 31, 2023

Milestone	Description	Date
Governance		
SC Executive Board	<ul style="list-style-type: none"> Regular Meetings held Strategy Review Program review, evaluation & recommendations 	Q3 - December 31, 2022 Q4 - March 31, 2023
Aadsookaanan Team	<ul style="list-style-type: none"> Regular meetings Aadsookaanan Applications Held a community event 	Q3 - December 31, 2022 Q4 - March 31, 2023

	<ul style="list-style-type: none"> Participate in training & held application discussion 	
Clan Engagement Team	<ul style="list-style-type: none"> All Clan Gathering Regular Team meetings Traditional Clan Teachings Academic presentation 	Q3 - December 31, 2022 Q4 - March 31, 2023
Management	<ul style="list-style-type: none"> Finance/HR management Finance/other reports to stakeholders Budgets Financial Statements Annual Report Outcomes report Partnership review Data management review 	Q3 - December 31, 2022 Q4 - March 31, 2023
BiigtigongX	<ul style="list-style-type: none"> Provide developer training BiigtigongX and Appsembler management Analytics review 	Q3 - December 31, 2022 Q4 - March 31, 2023
K - 8 STEM Implementation		
K – 8 Math & Science on-line Enhancement	<ul style="list-style-type: none"> Khan Academy 70% (Year 4) Assessment & reporting Growth Mind Set implemented Mid-year Report & Evaluation 	Q3 - December 31, 2022 Q4 - March 31, 2023
K-5 Technology & Engineering Project	<ul style="list-style-type: none"> code.org implemented 70% (School Year 4) Assessment & reporting Mid year Report & Evaluation 	Q3 - December 31, 2022 Q4 - March 31, 2023
6 – 8 Python & Robotics Project	<ul style="list-style-type: none"> Python 1 -70% (School Year 4) Robotics1-70% (School Year 4) Assessment & reporting Mid year Report & Evaluation 	Q3 - December 31, 2022 Q4 - March 31, 2023
Teacher Support Program	<ul style="list-style-type: none"> Implement teacher support program Built in on-going evaluation Living strategy 	Q3 - December 31, 2022 Q4 - March 31, 2023
9 – 12 STEM Implementation		
reBOOT co-op	<ul style="list-style-type: none"> 70% reBOOT complete (Cohort 2) 	Q3 - December 31, 2022 Q4 - March 31, 2023
CompTIA A+	<ul style="list-style-type: none"> Evaluation of pre-requisites for Co-op education 	Q3 - December 31, 2022
CompTIA A+	<ul style="list-style-type: none"> Core 1 (#220-1001) 70% complete (Group 3) Co-op education 70% complete (group 3) 	Q3 - December 31, 2022 Q4 - March 31, 2023
CompTIA A+	<ul style="list-style-type: none"> Core 1(#220-1001) 2nd half 70% complete (Group2) Course & Co-op education 	Q3 - December 31, 2022 Q4 - March 31, 2023
Land-based Meet-up Function		
Forum	<ul style="list-style-type: none"> Monthly activities reports Discussions 	Q3 - December 31, 2022 Q4 - March 31, 2023
Land-based Activities	<ul style="list-style-type: none"> Seasonal events completed Monitoring report 	Q3 - December 31, 2022 Q4 - March 31, 2023
Aadsookaanan Reconstruction		
Primary research	<ul style="list-style-type: none"> Oral History project report 	Q3 - December 31, 2022 Q4 - March 31, 2023
Aadsookaanan Application	<ul style="list-style-type: none"> Governance 	Q3 - December 31, 2022 Q4 - March 31, 2023
Database	<ul style="list-style-type: none"> Data base maintained 	Q3 - December 31, 2022 Q4 - March 31, 2023
WaaWaa Immersion		
Work flow & Quality Assurance	<ul style="list-style-type: none"> On-going review & evaluation reports 	Q3 - December 31, 2022 Q4 - March 31, 2023
WaaWaa Immersion Video	<ul style="list-style-type: none"> 100% video target complete Core Aadsookaanan Video Aadsookaanan Support Video 	Q3 - December 31, 2022 Q4 - March 31, 2023
Nishnaabemwin		
Bilingual STEM Video	<ul style="list-style-type: none"> 100% of target video for period 	Q3 - December 31, 2022 Q4 - March 31, 2023

Nishnaabemwin Overdub Video	<ul style="list-style-type: none"> 100% of target video for period 	Q3 - December 31, 2022 Q4 - March 31, 2023
Aadsookaanan Translation	<ul style="list-style-type: none"> Translations completed 	Q3 - December 31, 2022 Q4 - March 31, 2023
Nishnaabemwin Immersion Video	<ul style="list-style-type: none"> K-8 classroom implementation 	Q3 - December 31, 2022 Q4 - March 31, 2023
Engagement		
Parent Engagement	<ul style="list-style-type: none"> Education Committee update Bi-monthly video report Parent-Student Cohort Support 	Q3 - December 31, 2022 Q4 - March 31, 2023
Elders Engagement	<ul style="list-style-type: none"> Bi-monthly video report Elders gathering Aadsookaanan meeting 	Q3 - December 31, 2022 Q4 - March 31, 2023
Youth Engagement	<ul style="list-style-type: none"> Youth Council & Executive Board Youth Strategy Bi-monthly video report Pop-Up Session 	Q3 - December 31, 2022 Q4 - March 31, 2023
Community Engagement (off and on reserve)	<ul style="list-style-type: none"> Bi-monthly video report Community meeting Off-reserve meeting Live-stream meetings 	Q3 - December 31, 2022 Q4 - March 31, 2023
Leadership Engagement	<ul style="list-style-type: none"> Executive Board Council & SMT representatives to provide updates to Council & SMT 	Q3 - December 31, 2022 Q4 - March 31, 2023
Engagement Participation Log	<ul style="list-style-type: none"> Participation Report 	Q3 - December 31, 2022 Q4 - March 31, 2023
Professional Development - Training		
Education Staff	<ul style="list-style-type: none"> Blended Learning Models Implementing code.org, python 1 and robotics Immersion Implementation Assessment 	Q3 - December 31, 2022 Q4 - March 31, 2023
High School Program Team	<ul style="list-style-type: none"> Evaluation 	Q3 - December 31, 2022
BiigtigongX Team	<ul style="list-style-type: none"> Open edX On-line education technology 	Q3 - December 31, 2022 Q4 - March 31, 2023
Immersion Team	<ul style="list-style-type: none"> Assessment Immersion Instruction 	Q3 - December 31, 2022 Q4 - March 31, 2023
SC Executive Board	<ul style="list-style-type: none"> Program Evaluation Board development 	Q3 - December 31, 2022 Q4 - March 31, 2023
Aadsookaanan Team	<ul style="list-style-type: none"> Governance 	Q3 - December 31, 2022 Q4 - March 31, 2023
Clan Engagement Team	<ul style="list-style-type: none"> Traditional clan teachings Governance 	Q3 - December 31, 2022 Q4 - March 31, 2023
Aadsookaanan Reconstruction	<ul style="list-style-type: none"> Cultural Anthropology Data 	Q3 - December 31, 2022 Q4 - March 31, 2023

Fiscal Year 5: Milestones First Half

Q1 2023 -- April 1, 2023 to June 30, 2023 & Q2 2023 -- July 1, 2024 to September 30, 2023

Milestone Area	Milestone Description	Completion Date
Governance		
SC Executive Board	<ul style="list-style-type: none"> Regular Meetings held Strategy Review Program review, evaluation & recommendations Sustainability Plan 	Q1 - June 30, 2023 Q2 - September 30, 2023
Aadsookaanan Team	<ul style="list-style-type: none"> Regular meetings Aadsookaanan Application Held a community event Participate in training & held application discussion 	Q1 - June 30, 2023 Q2 - September 30, 2023
Clan Engagement Team	<ul style="list-style-type: none"> All Clan Gathering Regular Team meetings Traditional Clan Teachings Academic presentation 	Q1 - June 30, 2023 Q2 - September 30, 2023
Management	<ul style="list-style-type: none"> Finance/HR management Finance/other reports to stakeholders Strategic Plan Evaluation Framework Clan Engagement Review Team Development Strategy 	Q1 - June 30, 2023 Q2 - September 30, 2023
BiigtigongX	<ul style="list-style-type: none"> Add ons Appsembler management 	Q1 - June 30, 2023 Q2 - September 30, 2023
K - 8 STEM Implementation		
K - 8 Math & Science on-line Enhancement	<ul style="list-style-type: none"> Khan Academy 100% (Year 4) Assessment & reporting Growth Mind Set implemented End of School Year Report & Evaluation Implement Year 5 	Q1 - June 30, 2023 Q2 - September 30, 2023
K-5 Technology & Engineering Project	<ul style="list-style-type: none"> code.org implemented 100% (School Year 4) Assessment & reporting End of School Year 1 Report & Evaluation Implement Year 5 	Q1 - June 30, 2023 Q2 - September 30, 2023
6 - 8 Python & Robotics Project	<ul style="list-style-type: none"> Python 1 -100% (School Year 4) Robotics1-100% (School Year 4) Assessment & reporting End of School Year 1 Report & Evaluation Implement Year 5 	Q1 - June 30, 2023 Q2 - September 30, 2023
Teacher Support Program	<ul style="list-style-type: none"> Implement teacher support program based on consultations Built in on-going evaluation Living strategy 	Q1 - June 30, 2023 Q2 - September 30, 2023
9 - 12 STEM Implementation		
reBOOT co-op	<ul style="list-style-type: none"> Graduation 4th cohort Evaluation Report 5th cohort launched 	Q1 - June 30, 2023 Q2 - September 30, 2023
CompTIA A+	<ul style="list-style-type: none"> Summer Co-op prerequisite for 2020 Grade 8 graduates 	Q1 - June 30, 2023
CompTIA A+	<ul style="list-style-type: none"> Core 1 (#220-1001) - 1st half 100% complete (Group 3) Co-op education 100% complete (Group 3) Launch Group 4 	Q1 - June 30, 2023 Q2 - September 30, 2023
CompTIA A+	<ul style="list-style-type: none"> Core 1(#220-1001) 2nd half 100% complete (Group 3) Course & Co-op education Launch Group 3 	Q1 - June 30, 2023 Q2 - September 30, 2023
Land-based Meet-up Function		
Forum set up	<ul style="list-style-type: none"> Training completed Infrastructure set up Policy & procedure completed 	Q1 - June 30, 2023 Q2 - September 30, 2023

Communication & work flow set up	<ul style="list-style-type: none"> Process for inter-department scheduling set up 	Q1 - June 30, 2023 Q2 - September 30, 2023
Aadsookaanan Reconstruction		
Primary research	<ul style="list-style-type: none"> Oral History Research Project Framework complete 	Q1 - June 30, 2023 Q2 - September 30, 2023
Secondary research	<ul style="list-style-type: none"> 80% complete and approved by Aadsookaanan Team 	Q1 - June 30, 2023 Q2 - September 30, 2023
Database	<ul style="list-style-type: none"> Data base 	Q1 - June 30, 2023 Q2 - September 30, 2023
WaaWaa Immersion		
Work flow & Quality Assurance	<ul style="list-style-type: none"> Monitoring & Evaluation reports complete 	Q1 - June 30, 2023 Q2 - September 30, 2023
WaaWaa Immersion Video Production	<ul style="list-style-type: none"> 100% video target produced Video off-loaded to server Production numbers recorded 	Q1 - June 30, 2023 Q2 - September 30, 2023
Nishnaabemwin		
Bilingual STEM Video	<ul style="list-style-type: none"> 100% of target video for period 	Q1 - June 30, 2023 Q2 - September 30, 2023
Nishnaabemwin Overdub Video	<ul style="list-style-type: none"> 100% of target video for period 	Q1 - June 30, 2023 Q2 - September 30, 2023
Aadsookaanan Translation	<ul style="list-style-type: none"> Translations completed 	Q1 - June 30, 2023 Q2 - September 30, 2023
Nishnaabemwin Immersion Video	<ul style="list-style-type: none"> K-8 classroom implementation 	September 2020
Engagement		
Parent Engagement	<ul style="list-style-type: none"> Education Committee update Bi-monthly video report 	Q1 - June 30, 2023 Q2 - September 30, 2023
Elders Engagement	<ul style="list-style-type: none"> Bi-monthly video report Elders gathering Aadsookaanan meeting 	Q1 - June 30, 2023 Q2 - September 30, 2023
Youth Engagement	<ul style="list-style-type: none"> Youth Council & Executive Board Youth Strategy Bi-monthly video report Pop-Up Session 	Q1 - June 30, 2023 Q2 - September 30, 2023
Community Engagement (off and on reserve)	<ul style="list-style-type: none"> Bi-monthly video report Community meeting Off-reserve meeting Live-stream meetings 	Q1 - June 30, 2023 Q2 - September 30, 2023
Leadership Engagement	<ul style="list-style-type: none"> Executive Board Council & SMT representatives to provide updates to Council & SMT 	Q1 - June 30, 2023 Q2 - September 30, 2023
Engagement Participation Log	<ul style="list-style-type: none"> Participation Report 	Q1 - June 30, 2023 Q2 - September 30, 2023
Professional Development - Training		
Education Staff	<ul style="list-style-type: none"> Implementing code.org, python 1 and robotics Immersion Support Activities 	Q1 - June 30, 2023 Q2 - September 30, 2023
BiigtigongX Team	<ul style="list-style-type: none"> Open edX Technology 	Q1 - June 30, 2023 Q2 - September 30, 2023
Immersion Team	<ul style="list-style-type: none"> Comparative Mythology 	Q1 - June 30, 2023 Q2 - September 30, 2023
SC Executive Board	<ul style="list-style-type: none"> Board development 	Q1 - June 30, 2023 Q2 - September 30, 2023
Aadsookaanan Team	<ul style="list-style-type: none"> Comparative Mythology 	Q1 - June 30, 2023 Q2 - September 30, 2023
Clan Engagement Team	<ul style="list-style-type: none"> Traditional clan teachings Facilitating gatherings 	Q1 - June 30, 2023 Q2 - September 30, 2023
Aadsookaanan Reconstruction	<ul style="list-style-type: none"> Cultural Anthropology Data 	Q1 - June 30, 2023 Q2 - September 30, 2023

Fiscal Year 5: Milestones Second Half

Q3 2023 -- October 1, 2023 to December 31, 2023 & Q4 2024 -- January 1, 2024 to March 31, 2024

Milestone	Description	Date
Governance		
SC Executive Board	<ul style="list-style-type: none"> Regular Meetings held Strategy Review Program review, evaluation & recommendations 	Q3 - December 31, 2023 Q4 - March 31, 2024

Aadsookaanan Team	<ul style="list-style-type: none"> Regular meetings Approve core aadsookaanan Held a community event Participate in training & held application discussion 	Q3 - December 31, 2023 Q4 - March 31, 2024
Clan Engagement Team	<ul style="list-style-type: none"> All Clan Gathering Regular Team meetings Traditional Clan Teachings Academic presentation 	Q3 - December 31, 2023 Q4 - March 31, 2024
Management	<ul style="list-style-type: none"> Finance/HR management Finance/other reports to stakeholders Budgets Financial Statements Annual Report Outcomes report Partnership review Data management review 	Q3 - December 31, 2023 Q4 - March 31, 2024
BiigtigongX	<ul style="list-style-type: none"> Provide developer training BiigtigongX and Appsembler management Analytics review 	Q3 - December 31, 2023 Q4 - March 31, 2024
K - 8 STEM Implementation		
K – 8 Math & Science on-line Enhancement	<ul style="list-style-type: none"> Khan Academy 70% (Year 5) Assessment & reporting Growth Mind Set implemented Mid-year Report & Evaluation 	Q3 - December 31, 2023 Q4 - March 31, 2024
K-5 Technology & Engineering Project	<ul style="list-style-type: none"> code.org implemented 70% (School Year 5) Assessment & reporting Mid year Report & Evaluation 	Q3 - December 31, 2023 Q4 - March 31, 2024
6 – 8 Python & Robotics Project	<ul style="list-style-type: none"> Python 1 -70% (School Year 5) Robotics1-70% (School Year 5) Assessment & reporting Mid year Report & Evaluation 	Q3 - December 31, 2023 Q4 - March 31, 2024
Teacher Support Program	<ul style="list-style-type: none"> Implement teacher support program Built in on-going evaluation Living strategy 	Q3 - December 31, 2023 Q4 - March 31, 2024
9 – 12 STEM Implementation		
reBOOT co-op	<ul style="list-style-type: none"> 70% reBOOT complete (Cohort 4) 	Q3 - December 31, 2023 Q4 - March 31, 2024
CompTIA A+	<ul style="list-style-type: none"> Evaluation of pre-requisites for Co-op education 	Q3 - December 31, 2023
CompTIA A+	<ul style="list-style-type: none"> Core 1 (#220-1001) 70% complete (Cohort 4) Co-op education 70% complete (Cohort 4) 	Q3 - December 31, 2023 Q4 - March 31, 2024
CompTIA A+	<ul style="list-style-type: none"> Core 1(#220-1001) 2nd half 70% complete (Group3) Course & Co-op education 	Q3 - December 31, 2023 Q4 - March 31, 2024
Land-based Meet-up Function		
Forum	<ul style="list-style-type: none"> Monthly activities reports Discussions 	Q3 - December 31, 2023 Q4 - March 31, 2024
Land-based Activities	<ul style="list-style-type: none"> Seasonal events completed Monitoring report 	Q3 - December 31, 2023 Q4 - March 31, 2024
Aadsookaanan Reconstruction		
Core Aadsookaanan	<ul style="list-style-type: none"> 100% complete 	Q3 - December 31, 2023 Q4 - March 31, 2024
Primary research	<ul style="list-style-type: none"> Oral History project launch 	Q3 - December 31, 2023 Q4 - March 31, 2024
Secondary research	<ul style="list-style-type: none"> 100% complete & approved by Aadsookaanan Team 	Q3 - December 31, 2023 Q4 - March 31, 2024
Database	<ul style="list-style-type: none"> Data base maintained 	Q3 - December 31, 2023 Q4 - March 31, 2024
WaaWaa Immersion		
Work flow & Quality Assurance	<ul style="list-style-type: none"> On-going review & evaluation reports 	Q3 - December 31, 2023 Q4 - March 31, 2024
WaaWaa Immersion Video	<ul style="list-style-type: none"> 100% video target complete Core Aadsookaanan Video 	Q3 - December 31, 2023 Q4 - March 31, 2024

	• Aadsookaanan Support Video	
Nishnaabemwin		
Bilingual STEM Video	• 100% of target video for period	Q3 - December 31, 2023 Q4 - March 31, 2024
Nishnaabemwin Overdub Video	• 100% of target video for period	Q3 - December 31, 2023 Q4 - March 31, 2024
Aadsookaanan Translation	• Translations completed	Q3 - December 31, 2023 Q4 - March 31, 2024
Nishnaabemwin Immersion Video	• K-8 classroom implementation	Q3 - December 31, 2023 Q4 - March 31, 2024
Engagement		
Parent Engagement	• Education Committee update • Bi-monthly video report •	Q3 - December 31, 2023 Q4 - March 31, 2024
Elders Engagement	• Bi-monthly video report • Elders gathering • Aadsookaanan meeting	Q3 - December 31, 2023 Q4 - March 31, 2024
Youth Engagement	• Youth Council & Executive Board Youth Strategy • Bi-monthly video report • Pop-Up Session	Q3 - December 31, 2023 Q4 - March 31, 2024
Community Engagement (off and on reserve)	• Bi-monthly video report • Community meeting • Off-reserve meeting • Live-stream meetings	Q3 - December 31, 2023 Q4 - March 31, 2024
Leadership Engagement	• Executive Board Council & SMT representatives to provide updates to Council & SMT	Q3 - December 31, 2023 Q4 - March 31, 2024
Engagement Participation Log	• Participation Report	Q3 - December 31, 2023 Q4 - March 31, 2024
Professional Development - Training		
Education Staff	• Evaluating on-line resources • Evaluating code.org, python 1 and robotics • Immersion Implementation	Q3 - December 31, 2023 Q4 - March 31, 2024
BiigtigongX Team	• Open edX • On-line education technology	Q3 - December 31, 2023 Q4 - March 31, 2024
Immersion Team	• Animation • Immersion Instruction	Q3 - December 31, 2023 Q4 - March 31, 2024
SC Executive Board	• Evaluation • Board development	Q3 - December 31, 2023 Q4 - March 31, 2024
Aadsookaanan Team	• Oral tradition & storytelling	Q3 - December 31, 2023 Q4 - March 31, 2024
Clan Engagement Team	• Traditional clan teachings	Q3 - December 31, 2023
Aadsookaanan Reconstruction	• Cultural Anthropology Data	Q3 - December 31, 2023

Fiscal Year 6: Milestones First Half

Q1 2024 -- April 1, 2024 to June 30, 2024

Milestone Area	Milestone Description	Completion Date
Governance		
SC Executive Board	<ul style="list-style-type: none"> Project Evaluation & Analysis Recommendations Long-term strategies 	Q1 - June 30, 2024
Aadsookaanan Team	<ul style="list-style-type: none"> Celebration 	Q1 - June 30, 2024
Clan Engagement Team	<ul style="list-style-type: none"> All Clan Gathering Review to date Long-term strategies 	Q1 - June 30, 2024
Management	<ul style="list-style-type: none"> Project Evaluation & Analysis Recommendations Long-term strategies Reports Funding analysis Closure Activities Transition Plan 	Q1 - June 30, 2024
BiigtigongX	<ul style="list-style-type: none"> Customer Survey Appsembler management 	Q1 - June 30, 2024
K - 8 STEM Implementation		
K – 8 Math & Science on-line Enhancement	<ul style="list-style-type: none"> Khan Academy 100% (Year 5) Assessment & reporting Growth Mind Set implemented End of School Year Report & Evaluation 	Q1 - June 30, 2024
K-5 Technology & Engineering Project	<ul style="list-style-type: none"> code.org implemented 100% (School Year 5) Assessment & reporting End of School Year 1 Report & Evaluation 	Q1 - June 30, 2024
6 – 8 Python & Robotics Project	<ul style="list-style-type: none"> Python 1 -100% (School Year 5) Assessment & reporting End of School Year Report & Evaluation 	Q1 - June 30, 2024
Teacher Support Program	<ul style="list-style-type: none"> Implement teacher support program based on consultations Built in on-going evaluation Living strategy 	Q1 - June 30, 2024
9 – 12 STEM Implementation		
reBOOT co-op	<ul style="list-style-type: none"> Graduation 5th cohort Evaluation Report 	Q1 - June 30, 2024
CompTIA A+	<ul style="list-style-type: none"> Core 1 (#220-1001) – 1st half 100% complete (Group 4) Co-op education 100% complete (Group 4) 	Q1 - June 30, 2024
CompTIA A+	<ul style="list-style-type: none"> Core 1(#220-1001) 2nd half 100% complete (Group 3) Course & Co-op education 	Q1 - June 30, 2024
Land-based Meet-up Function		
Completion	<ul style="list-style-type: none"> Final Report Recommendations 	Q1 - June 30, 2024
Aadsookaanan Reconstruction		
Completion	<ul style="list-style-type: none"> Ceremony Recommendations 	Q1 - June 30, 2024
WaaWaa Immersion		
Work flow & Quality Assurance	<ul style="list-style-type: none"> Final Report Recommendations 	Q1 - June 30, 2024
WaaWaa Immersion Video Production	<ul style="list-style-type: none"> 100% video target produced Video off-loaded to server Production numbers recorded 	Q1 - June 30, 2024
Nishnaabemwin		
Bilingual STEM Video	<ul style="list-style-type: none"> 100% of target video for period 	Q1 - June 30, 2024
Nishnaabemwin Overdub Video	<ul style="list-style-type: none"> 100% of target video for period 	Q1 - June 30, 2024
Aadsookaanan Translation	<ul style="list-style-type: none"> Translations completed 	Q1 - June 30, 2024
Nishnaabemwin Immersion Video	<ul style="list-style-type: none"> K-8 classroom implementation 	Q1 - June 30, 2024
Engagement		

Parent Engagement	<ul style="list-style-type: none"> • Education Committee update • Bi-monthly video report • Evaluation • Celebration 	Q1 - June 30, 2024
Elders Engagement	<ul style="list-style-type: none"> • Bi-monthly video report • Elders gathering • Aadsookaanan meeting • Evaluation • Celebration 	Q1 - June 30, 2024
Youth Engagement	<ul style="list-style-type: none"> • Bi-monthly video report • Evaluation • Celebration 	Q1 - June 30, 2024
Community Engagement (off and on reserve)	<ul style="list-style-type: none"> • Bi-monthly video report • Evaluation • Celebration 	Q1 - June 30, 2024
Leadership Engagement	<ul style="list-style-type: none"> • Evaluation • Celebration 	Q1 - June 30, 2024
Engagement Participation Log	• Participation Final Report	Q1 - June 30, 2024
Professional Development - Training		
Everyone	How to Celebrate	Q1 - June 30, 2024

Chapter 9: Implementation Phase Requirements

Introduction

Biigtigong Nishnaabeg is committed to meeting the applicable municipal, provincial and federal reporting and legislative and policy requirements should we be selected as a winner.

Duty to Consult with Indigenous Groups

Biigtigong is a First Nation community and therefore the Duty to consult with indigenous groups does not apply. However, with that being said, we want to acknowledge that Biigtigong Nishnaabeg has policy regarding Duty to consult. This document outlines how Biigtigong Nishnaabeg expects to be approached regarding activities within their traditional territory. This guideline establishes Biigtigong's expectations, policies and practices for governments and others to follow when consulting with them. Our Smart Cities Team reviewed this policy as we were developing our engagement strategy with the community. We wanted to build upon best practices established in the community and develop a solid engagement strategy.

Modern Treaty Obligations

With the exception of six First Nations, Biigtigong being one, the area First Nations are signatories to the Robinson-Superior Treaty of 1850. There are no modern treaties in the Biigtigong Nishnaabeg traditional territory or shared territory with surrounding First Nations.

Canada's Community Employment Benefit (CEB)

Projects supported by the Investing in Canada Infrastructure Program provide an opportunity to promote increased employment opportunities for a broader array of Canadians. The Smart Cities Challenge requires the finalist to identify employment and/or procurement opportunities for at least three of the targeted groups and how Biigtigong intends to report upon CEB requirements, should we become a winner.

To meet these requirements Biigtigong has selected the following 3 target groups: Indigenous peoples, woman and youth. The main beneficiary of our Smart Cities proposal is Canada's Indigenous youth. Our projects are specifically aimed at this group with the ultimate goal of making them more educated and more employable. We will include woman as a specific category that we will also target. We will ensure our indicators for success specifically capture data on these 3 identified groups, in terms of their participation in our projects. We anticipate that 90% of our participants will come from one of these groups.

Additionally, we will utilize our procurement strategies and direct our hiring towards these 3 groups. We expect that at least 80% of our work force for this project will be Indigenous, a youth or a woman. It will be very easy to meet these targets and to track the relevant supporting data.

Reporting on the CEB Requirements

As per the CEB requirements, we will report annually on the progress made. Should we be selected as a winner, we will develop a detailed strategy that also defines our reporting requirements. CEB requires some specific information and we will accommodate this requirement. For example, we need to track the number of hours worked by the target population and/or the value of contracts awarded to the target groups. Our accounting software allows us to easily track this information.

A qualitative narrative that describes the progress made is also required. The narrative will provide information on both the successes and challenges experienced in meeting our targets. We understand

that this information will help in developing Canada's strategies to offer more diversified employment and procurement opportunities.

We will develop specific reporting mechanisms to support any requirements or conditions of being a selected a winner. We have experience establishing targets, monitoring progress and being flexible to respond to issues.

Risks and Mitigating Strategies

Risk	Likelihood	Impact	Mitigating Strategies
Woman at home with no child care	Medium	Medium	<ul style="list-style-type: none"> • Provide childcare support at the daycare • Work with other supports in the community
Work readiness levels are low amongst participants	Medium	Medium	<ul style="list-style-type: none"> • Community programs exist that provide assistance in this area – use these • Long-term strategies
Youth experiencing social and emotional issues	High	High	<ul style="list-style-type: none"> • Social Service support programs • Cultural support programs • Life skills component built in • Use of elders in the programs • Utilizing land-based learning program
Lack of parent support	Low	Medium	<ul style="list-style-type: none"> • Provide information and education to the parent • Offer home-visits • Engaging and non-judgmental approaches • Utilize existing relationships
Lack of formal education and skill set to do some specific tasks	High	Low	<ul style="list-style-type: none"> • In the short-term we will have to recruit from outside the population • Develop long-term capacity development to attain education and experience
Current procurement policy may not support goals	Low	Low	<ul style="list-style-type: none"> • Review policy & recommend changes • Conduct education on updated policy
Political leadership lack of understanding of the project procurement goals	Low	Medium	<ul style="list-style-type: none"> • Address in person at a council meeting • Provide research and education • Regular reporting and communication
Lack of financial resources to implement training programs	Low	High	<ul style="list-style-type: none"> • Council has already made a commitment to direct some resources to summer employment • Develop funding proposals
Data security and protection of personal information	Low	High	<ul style="list-style-type: none"> • Data and Privacy Policy • PIA completion • Communications & education • Disclosure and Transparency strategy

Appendix A

Aadsookaanan Reconstruction and Video Production

Reconstructing and writing core aadsookaanan

Implementation Year 1 through 5: Sep. 2019 – Aug. 2024

Year 1	Sep. 2019 – Apr. 2020 May 2020 – Aug. 2020	Reconstruct and write core aadsookaanan (at time and a half) ----
Year 2	Sep. 2020 – Aug. 2021	Reconstruct and write core aadsookaanan
Year 3	Sep. 2021 – Aug. 2022	Reconstruct and write core aadsookaanan
Year 4	Sep. 2022 – Aug. 2023	Reconstruct and write core aadsookaanan
Year 5	Sep. 2023 – Aug. 2024	Reconstruct and write core aadsookaanan

Producing Waawaa video

Implementation Year 1 through 5: Sep. 2019 – Aug. 2024

Year 1	Sep. 2019 – Aug. 2020	Produce Waawaa video	200 hours
Year 2	Sep. 2020 – Aug. 2021	Produce Waawaa video	400 hours
Year 3	Sep. 2021 – Aug. 2022	Produce Waawaa video	400 hours
Year 4	Sep. 2022 – Aug. 2023	Produce Waawaa video	500 hours
Year 5	Sep. 2023 – Aug. 2024	Produce Waawaa video	500 hours

Overdubbing Waawaa video and/or producing Nishnaabe-language immersion video (live-action or 2D-animated)

Implementation Year 1 through 5: Sep. 2019 – Aug. 2024

Year 1	Sep. 2019 – Apr. 2020 May 2020 – Aug. 2020	--- Overdub Waawaa video and/or produce Nishnaabe-language immersion video (live-action or 2D-animated)	--- 100 hours
Year 2	Sep. 2020 – Aug. 2021	Overdub Waawaa video and/or produce Nishnaabe-language immersion video (live-action or 2D-animated)	350 hours
Year 3	Sep. 2021 – Aug. 2022	Overdub Waawaa video and/or produce Nishnaabe-language immersion video (live-action or 2D-animated)	450 hours
Year 4	Sep. 2022 – Aug. 2023	Overdub Waawaa video and/or produce Nishnaabe-language immersion video (live-action or 2D-animated)	550 hours
Year 5	Sep. 2023 – Aug. 2024	Overdub Waawaa video and/or produce Nishnaabe-language immersion video (live-action or 2D-animated)	550 hours

Appendix B

Rollout of English-language K-12 STEM curriculum

:

English-language K-12 STEM curriculum

Pre-implementation: Summer 2019

One-week long 'Summer 2019 Coding Camp'

- accelerated, age-appropriate Code.org Computer Science Fundamentals curriculum
- fulfills block-based programming prerequisite for Python 1 for incoming Grade 6 students
- open to incoming Grade 3 through Grade 8 students

English-language K-12 STEM curriculum

Implementation Year 1: beginning Sep. 2019

Grade K	Code.org	Computer Science Fundamentals curriculum – Course A
Grade 1	Code.org	Computer Science Fundamentals curriculum – Course B
Grade 2	Code.org	Computer Science Fundamentals curriculum – Course C
Grade 3	Code.org	Computer Science Fundamentals curriculum – Course D
Grade 4	Code.org	Computer Science Fundamentals curriculum – Course E
Grade 5	Code.org	Computer Science Fundamentals curriculum – Course F
Grade 6	Python 1	Tynker.com Python 101 curriculum
Grade 7	Robotics 1	1st half of LEGO Mindstorms Education EV3 curriculum - plus projects
Grade 8	Robotics 1	1st half of LEGO Mindstorms Education EV3 curriculum - plus projects
4 weeks during the summer between Grade 8 and Grade 9 - Co-op prerequisite		
Grade 9	Co-op Technology Centre – in partnership with reBOOT Canada	
Grade 10	Co-op Technology Centre – in partnership with reBOOT Canada	
Grade 11	Co-op Technology Centre – in partnership with reBOOT Canada	
Grade 12	Co-op Technology Centre – in partnership with reBOOT Canada	

English-language K-12 STEM curriculum

Implementation Year 2: beginning Sep. 2020

Grade K	Code.org	Computer Science Fundamentals curriculum – Course A
Grade 1	Code.org	Computer Science Fundamentals curriculum – Course B
Grade 2	Code.org	Computer Science Fundamentals curriculum – Course C
Grade 3	Code.org	Computer Science Fundamentals curriculum – Course D
Grade 4	Code.org	Computer Science Fundamentals curriculum – Course E
Grade 5	Code.org	Computer Science Fundamentals curriculum – Course F
Grade 6	Python 1	Tynker.com Python 101 curriculum
Grade 7	Robotics 1	1st half of LEGO Mindstorms Education EV3 curriculum - plus projects
Grade 8	Robotics 2	2nd half of LEGO Mindstorms Education EV3 curriculum - plus projects
4 weeks during the summer between Grade 8 and Grade 9 - Co-op prerequisite		
Grade 9	CompTIA A+	1st half of Exam #220-1001 (Core 1) Preparation curriculum
Grade 10	CompTIA A+	1st half of Exam #220-1001 (Core 1) Preparation curriculum
Grade 11	CompTIA A+	1st half of Exam #220-1001 (Core 1) Preparation curriculum
Grade 12	CompTIA A+	1st half of Exam #220-1001 (Core 1) Preparation curriculum

English-language K-12 STEM curriculum

Implementation Year 3: beginning Sep. 2021

Grade K	Code.org	Computer Science Fundamentals curriculum – Course A
Grade 1	Code.org	Computer Science Fundamentals curriculum – Course B
Grade 2	Code.org	Computer Science Fundamentals curriculum – Course C
Grade 3	Code.org	Computer Science Fundamentals curriculum – Course D
Grade 4	Code.org	Computer Science Fundamentals curriculum – Course E
Grade 5	Code.org	Computer Science Fundamentals curriculum – Course F
Grade 6	Python 1	Tynker.com Python 101 curriculum
Grade 7	Robotics 1	1st half of LEGO Mindstorms Education EV3 curriculum - plus projects
Grade 8	Robotics 2	2nd half of LEGO Mindstorms Education EV3 curriculum - plus projects
4 weeks during the summer between Grade 8 and Grade 9 - Co-op prerequisite		
Grade 9	CompTIA A+	1st half of Exam #220-1001 (Core 1) Preparation curriculum
Grade 10	CompTIA A+	2nd half of Exam #220-1001 (Core 1) Preparation curriculum
Grade 11	CompTIA A+	2nd half of Exam #220-1001 (Core 1) Preparation curriculum
Grade 12	CompTIA A+	2nd half of Exam #220-1001 (Core 1) Preparation curriculum

English-language K-12 STEM curriculum

Implementation Year 4: beginning Sep. 2022

Grade K	Code.org	Computer Science Fundamentals curriculum – Course A
Grade 1	Code.org	Computer Science Fundamentals curriculum – Course B
Grade 2	Code.org	Computer Science Fundamentals curriculum – Course C
Grade 3	Code.org	Computer Science Fundamentals curriculum – Course D
Grade 4	Code.org	Computer Science Fundamentals curriculum – Course E
Grade 5	Code.org	Computer Science Fundamentals curriculum – Course F
Grade 6	Python 1	Tynker.com Python 101 curriculum
Grade 7	Robotics 1	1st half of LEGO Mindstorms Education EV3 curriculum - plus projects
Grade 8	Robotics 2	2nd half of LEGO Mindstorms Education EV3 curriculum - plus projects
4 weeks during the summer between Grade 8 and Grade 9 - Co-op prerequisite		
Grade 9	CompTIA A+	1st half of Exam #220-1001 (Core 1) Preparation curriculum
Grade 10	CompTIA A+	2nd half of Exam #220-1001 (Core 1) Preparation curriculum
Grade 11	CompTIA A+	1st half of Exam #220-1002 (Core 2) Preparation curriculum
Grade 12	CompTIA A+	1st half of Exam #220-1002 (Core 2) Preparation curriculum

English-language K-12 STEM curriculum

Implementation Year 5: beginning Sep. 2023

Grade K	Code.org	Computer Science Fundamentals curriculum – Course A
Grade 1	Code.org	Computer Science Fundamentals curriculum – Course B
Grade 2	Code.org	Computer Science Fundamentals curriculum – Course C
Grade 3	Code.org	Computer Science Fundamentals curriculum – Course D
Grade 4	Code.org	Computer Science Fundamentals curriculum – Course E
Grade 5	Code.org	Computer Science Fundamentals curriculum – Course F
Grade 6	Python 1	Tynker.com Python 101 curriculum
Grade 7	Robotics 1	1st half of LEGO Mindstorms Education EV3 curriculum - plus projects
Grade 8	Robotics 2	2nd half of LEGO Mindstorms Education EV3 curriculum - plus projects
4 weeks during the summer between Grade 8 and Grade 9 - Co-op prerequisite		
Grade 9	CompTIA A+	1st half of Exam #220-1001 (Core 1) Preparation curriculum
Grade 10	CompTIA A+	2nd half of Exam #220-1001 (Core 1) Preparation curriculum
Grade 11	CompTIA A+	1st half of Exam #220-1002 (Core 2) Preparation curriculum
Grade 12	CompTIA A+	2nd half of Exam #220-1002 (Core 2) Preparation curriculum

Appendix C

Rollout of immersion video and bilingual STEM video

Nishnaabe-language immersion video and bilingual STEM video rollout

Implementation Year 1: beginning Sep. 2019

Grade K	Nishnaabe-language immersion video	0 hours
Grade 1	Nishnaabe-language immersion video	0 hours
Grade 2	Nishnaabe-language immersion video	0 hours
Grade 3	Nishnaabe-language immersion video	0 hours
Grade 4	Nishnaabe-language immersion video	0 hours
Grade 5	Nishnaabe-language immersion video	0 hours
Grade 6	Nishnaabe-language immersion video	0 hours
Grade 7	Nishnaabe-language immersion video	0 hours
Grade 8	Nishnaabe-language immersion video	0 hours
Grade 9	Bilingual STEM video	0 hours
Grade 10	Bilingual STEM video	0 hours
Grade 11	Bilingual STEM video	0 hours
Grade 12	Bilingual STEM video	0 hours

Nishnaabe-language immersion video and bilingual STEM video rollout

Implementation Year 2 through 5: Sep. 2020 – Aug. 2024

Grade K	Nishnaabe-language immersion video	222 hours
Grade 1	Nishnaabe-language immersion video	222 hours
Grade 2	Nishnaabe-language immersion video	222 hours
Grade 3	Nishnaabe-language immersion video	222 hours
Grade 4	Nishnaabe-language immersion video	222 hours
Grade 5	Nishnaabe-language immersion video	222 hours
Grade 6	Nishnaabe-language immersion video	222 hours
Grade 7	Nishnaabe-language immersion video	222 hours
Grade 8	Nishnaabe-language immersion video	222 hours
Grade 9	Bilingual STEM video	250 hours
Grade 10	Bilingual STEM video	250 hours
Grade 11	Bilingual STEM video	250 hours
Grade 12	Bilingual STEM video	250 hours

Appendix D

Preliminary Privacy Assessment PIA

Biigtigong Nishnaabeg

Preliminary Privacy Impact Assessment Report

Smart Cities Final Proposal

Smart Cities Final Proposal Team
3-4-2019

Executive Summary

Background

A Privacy Impact Assessment (PIA) is a risk management tool used to identify the actual or potential effects that a proposed or existing information system, technology, program, process or other activity may have on an individual's privacy. The purpose of completing this PIA is to identify the potential privacy impact resulting from our proposed project and the appropriate mitigations strategies. This PIA will cover all the proposed activities under the SMART Cities project and will consider all data stored and accessed through the Open edX platform including; Data Storage, Data Access, Data Retention and Data Disposal.

When developing this PIA, the project team referred to international, federal and provincial regulations regarding privacy to inform this PIA report. Also, throughout this project, the project team will continue to assess the project's privacy risks and impact to determine if there is a need to update the privacy analysis and/or the PIA report. This ongoing assessment is an essential part of identifying and mitigating new issues and changes impacting privacy that may arise during the implementation phases.

Privacy and Consent

Enrolment in this program is 100% voluntary and students and their guardian will be required to provide consent prior to beginning the program. Once consent has been given the student will need to create an account on the Open edX platform, which will be how students can access the language and STEM training. Teachers will be the only other party that has access to this information, to ensure accurate grading. Community, industry partners and stakeholders will not collect, use or disclose any personal information.

Information flows

This project involves creating a blended-learning environment with both online and real-world components. To create the online learning environment the Open edX platform we'll collect minimal personal information to create an account (i.e. name, user name and password). Additionally, certain functionalities of the Open edX platform, such as the meetup forum or time spent watching videos, will also generate data on a user's location and behavior patterns.

The project team will work with Technology/Software providers, including Appsembler, our chosen SaaS (Software as a Service) provider of Open edX, to enter into a contractual agreement which will ensure personal information is handled in a privacy-compliant manner, and restricts the third party's use of personal information for purposes outside the project scope. In all cases the user will be advised about any third party's privacy policies/statements when directed to a third-party site for additional links or resources, as part of informed consent process.

Data stored on the Open edX platform will be removed from the server following a student's successful completion of the program.

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1.0 INTRODUCTION

Project Summary

Our Project Challenge Statement reads:

By means of active, cross-generational, technology-empowered, real-world participation in the intergenerational transfer of traditional Nishnaabe knowledge through the medium of our language, and the bilingual delivery of modern K-12 STEM knowledge, our community will transform our youth into better-educated, more-employable, better-grounded, and more holistically Nishnaabe people.

The scope of our project includes the development of 2,000 hours of Nishnaabe-language immersion videos, the content of which will be our core aadsookaanan (our sacred stories, our philosophical foundations). It is intended that this will create understanders of our Nishnaabe language who can then go on to successfully complete an additional 1,000 hours of STEM educational video, the audio of which is delivered in our Nishnaabe language.

This project will move Nishnaabe people from being mainly passive consumers of technology to being active, effective STEM-educated administrators, managers, and users of data who are able to achieve meaningful outcomes for themselves, their families and their community. Upon completing high school, our youth will have received more than 2,000 hours of mobile-enabled, online Nishnaabe-language immersion instruction in all of our core aadsookaanan (sacred stories). Additionally, our youth will be able to comprehend spoken Nishnaabemwin and will have attained a basic proficiency in coding, robotics, and will possess a strong foundation in mathematics and science through an additional 1,000 hours of STEM curriculum. All STEM subject videos and courses will be available under a creative commons license, in both Nishnaabemwin and English. All of this education will occur in a blended-learning environment with a strong real-world participation component built into the program.

The eLearning functionality of our community's open source, mobile-enabled Learning Management System (LMS) - i.e., Open edX- facilitates the learning of the STEM subjects and the eAcquisition functionality of Open edX will facilitate the acquisition of our Nishnaabe language. The entire educational experience will be tied together with the meetup forum functionality of Open edX. This will serve as a bridge between the digital, online world and the material, real world. This forum will encourage and empower our youth to participate not only in online communities, but in the traditional Nishnaabe activities going on in the real-world community as well to add value to their overall learning experience. Based on this scope of work and objectives the following Project Management Plan has been developed to guide the project team through the implementation phases of this project and beyond.

Purpose of Privacy Impact Assessment Report

A Privacy Impact Assessment (PIA) is a risk management tool used to identify the actual or potential effects that a proposed or existing information system, technology, program, process or other activity may have on an individual's privacy. The purpose of completing this PIA is to identify the potential privacy impact resulting from our proposed project and the appropriate mitigations strategies. Notably, the PIA process is non-linear, as privacy concerns can and will continue to be identified over the course of the project's implementation. The appendices included with this report provide support to the process undertaken in completing the PIA.

Desired Response & Timelines

This PIA is being submitted to satisfy the requirements of the Smart Cities Finalist Challenge – Final Proposal. The project team is seeking prompt approval as required to proceed to the final proposal review stage.

Background

Scope of the PIA

Privacy is of the utmost importance to our leadership, project team and community as a whole. Much of the information we will be collecting for this project can be managed within the existing processes already managed by teaching staff (i.e. students names, grades, courses, contact information); however, given that this project entails a blended-learning environment, through the Open edX platform, this project will result in the generation of new data from users creating accounts on this platform. As such, this PIA will cover all proposed activities under the Smart Cities project, including all data stored and accessed through the Open edX platform. Considerations will also be made for Data Storage, Data Access, Data Retention and Data Disposal required throughout the lifespan of this project.

This PIA does not cover any existing processes in place to manage personal information already collected and managed within the community and school system that are not intertwined with the Open edX platform. For example, the Open edX platform does not provide the functionality to track course work completed only at the brick-and-mortar school, but only those K-12 curriculum augmentations that will be available on Open edX. As such, the only personal information that will be collected as part of this project will be generated from the user accounts, which will be accessible by the student and teacher only.

It should be noted that in addition to the information we collect via the Open edX platform, that as a 3rd party entity, users shall also be subject to the terms of this platform. Similarly, given that the Open edX platform links to 3rd party websites and embedded videos from 3rd party sites, users will similarly be subject to the privacy terms of these entities. As described within this preliminary PIA, the project team will work with Technology/Software providers, especially Appsembler, our chosen SaaS (Software as a Service) provider of Open edX, to enter into a contractual agreement which ensures all personal information is handled in a privacy-compliant manner, wherever possible. Particularly, the third party's use of the personal information will be restricted to only tasks they are contractually obligated to complete and nothing more. In all cases we will advise users about a third party's privacy policies/terms should the user be directed to a third-party site for additional links or resources, as part of informed consent process.

The process

The project team shall refer to international, federal and provincial regulations regarding privacy to inform this PIA report. Specifically, this included The *International Conference on Data Protection and Privacy Commissioners* resolution and the Canadian *Privacy Act* and the *Personal Information Protection and Electronic Documents Act (PIPEDA)*. Finally, provincial regulations and best practices have been used to inform our project team's understanding include the;

- Smart Cities Finalist Guide and Resources including staff

- Planning for Success: Privacy Impact Assessment Guide
- De-identification Guidelines for Structured Data

Also, throughout this project, the project team will continue to assess the project's privacy risks and impact to determine if there is a need to update the privacy analysis and/or the PIA report. This ongoing assessment is an essential part of identifying and mitigating new issues and changes impacting privacy that may arise during the implementation phases.

Glossary

Please refer to Appendix A for a glossary of terms.

PROJECT

Project Objectives:

Our project seeks to achieve the following four (4) objectives to meet our Challenge Statement. The progress indicators also outlined in **Table 1** will be used to measure the ongoing success of the project.

Table 1: Objectives and Measurable Outcomes:

Objectives		Progress Indicator/Measurable Outcome
1.	Youth who are "better-educated"	<ul style="list-style-type: none"> • Increase in number of K-12 STEM courses successfully completed by K-12 students, • Decrease in percentage of K-12 students needing remedial help in STEM subject areas
2.	Youth who are "more-employable"	<ul style="list-style-type: none"> • Increase in number of K-12 STEM courses successfully completed by K-12 students, • Increase in number of K-12 students who have at least a basic ability to code
3.	Youth who are "better-grounded" in their Nishnaabe identity	<ul style="list-style-type: none"> • Increase in number of K-12 students who know the key concepts expressed in each of our core aadsookaanan • Increased annual participation rate in number of traditional Nishnaabe activities for K-12 Students
4.	Youth who are "more holistically Nishnaabe"	<ul style="list-style-type: none"> • Minimum 2,000 hours of Nishnaabe language acquired by graduating eighth-graders • Increased annual participation rate in number of traditional Nishnaabe activities for K-12 Students • Minimum 1,000 hours of Nishnaabe-language STEM video successfully completed by graduating high school seniors

Description of Project

To achieve our project goals the creation of an online, mobile-enabled platform will be required that is able to carry out the following three functions:

- (1) **eLearning.** Mobile-enabled eLearning functionality built into the Open edX platform. This refers to all learning online not related to language acquisition.
- (2) **eAcquisition.** Mobile-enabled eAcquisition - the functionality will be nearly identical to our eLearning functionality, but will have the added responsibility of enabling the effective acquisition of our Nishnaabe language. Specifically, this include hosting and administrating 2,000 hours of Nishnaabe-language immersion videos. As our community makes a strong distinction between language *learning* (a conscious, cognitive process) and language *acquisition* (which occurs subconsciously), we need to keep these two functionalities independent of each other so that each one's unique pedagogical approach can be implemented effectively.
- (3) **Meetup Forum.** Mobile-enabled meetup forum functionality will serve as the central 'online gathering' place which will facilitate the bridging and interfacing of the digital world with the material, real world.

We have chosen the Open edX platform for our project. Open edX is an open source software and facilitates the production of materials to be made available under a Creative Commons license. Appsembler is our chosen SaaS (Software as a Service) provider of the Open edX platform.

Accountability

The Smart Cities project team is accountable for this project. Please see roles and responsibilities for additional information.

Related Initiatives and Linkages

It is important for the project team to have a solid understanding of existing and ongoing initiatives in the community that may influence this Smart Cities project. The project team has identified three (3) existing projects of particular importance which should be monitored as part of the project management process. Project leads from each of the below initiatives have also already been identified as key stakeholders in the Smart Cities process and will continue to be consulted over the course of the project's implementation phases, as outlined in our stakeholder management plan.

- **Language Project:** ongoing project to capture and preserve the Nishnaabe language, specifically the Biigtigong dialect.
- **Curriculum Development:** ongoing project to update the school curriculum to emphasize cultural and land-based learning activities for K-8 students.
- **New School Project** Biigtigong Nishnaabeg is currently in the process of designing a new elementary school and Business Training and Education Complex. These facilities can be used to promote this program and facilitate participation by youth and young professionals. By having this easy access to the target audience this will ensure that the program is adopted.

PRIVACY

Participation and Consent

In order to ensure participants (and their legal guardians) make an informed decision when providing their consent to participate in the Open edX platform, a privacy seminar will be held at the community centre prior to program roll out. During this seminar, the project team will review the project and the content of this Privacy Impact Assessment to ensure participants (and their guardians) are knowledgeable of the inherent risks of participating in a partially-online learning platform. This seminar will overview what information will be collected and why, who will have access to this information once an account has been created and what agreements are in place (at that time) with all 3rd party providers. This seminar will also allow community members to voice their privacy concerns with respect to participating in an online environment. The project team will also present the policies and procedures developed thus far to mitigate any identified privacy risks and how any data breaches will be managed, as described within this document and further iterations of the PIA.

Should students, or their legal guardians, opt-out of the online-augmented (i.e., blended-learning) program, they will be given alternative means of participating in the K-12 curriculum at the brick-and-mortar school. It is important to note the participation in this Open edX platform is 100% voluntary and if not adopted will not diminish the learning of non-participants. Participants and their guardians will be provided a consent form outlining the privacy concerns and risks, for review and signature prior to enrolling in the Open edX platform.

Personal Information

Users of the Open edX platform will be required to provide the following types of personal information. This information will then be used by teaching Staff to offer better service to participants.

- Account creation and login information, including user name and password *
- Location information - anytime the student interacts with Open edX platform, location data is generated **
- Patterns of behaviour (which educational videos were watched and for how long)

*Students will not be asked to provide their address, date of birth nor other identifying information for the purposes of setting up an account with Open edX. The intent of collecting a user name and password is only to allow a student to create an account and login to the Open edX platform and to enable teachers to track a student's progress.

**Due to the very nature of the internet, anytime a person connects to the internet, the media that is being delivered to that person is trackable using a particular 'IP address.' Location data can then be deduced from that IP address. There is no reasonable (or perhaps possible) way to interact with the internet without generating location data. Total location privacy is not possible within the current organization of the internet since IP addressing is a foundational part of the internet. As such we can only attempt to maximize our privacy online - while accepting that our location will always be exposed to some degree.

The Open edX platform will be owned and operated by the Biigtigong Nishnaabeg Smart Cities project team, lead by Chief and Council. Students (via their guardians) will consent to voluntarily provide their name, user name, and password in order to create an account on the Open edX platform. Information to

be collected will include the name/user name of the student and the amount of time a student spends watching a video, as well as any participation in any traditional activities as tracked through the meetup forum functionality. Similarly, should students identify participation in traditional activities through the meetup forum functionality of Open edX, this will generate location data. Again, providing this information is voluntary and students will be given alternative means of participating and reporting involvement in real world opportunities outside of Open edX, if necessary.

The purpose of teachers collecting the aforementioned information is to ensure a student has completed the required curriculum. Teachers will not provide information about a student to Open edX nor to Appsembler. The flow of information is from student to Open edX to teacher, which is then provided back to the student in the form of a report card and to the project team in the form of aggregated summary data for performance measurement tracking only.

This student-specific information will only be accessible by the teaching staff. No other project team member will have access to individual student specific information. No information will be made public.

Legal Authority

The legal authority for this project rests with the regulations and policies of Biigtigong Nishnaabeg First Nation as well as FIPPA and related agreements with partners, agents and other third parties.

Roles & Responsibilities

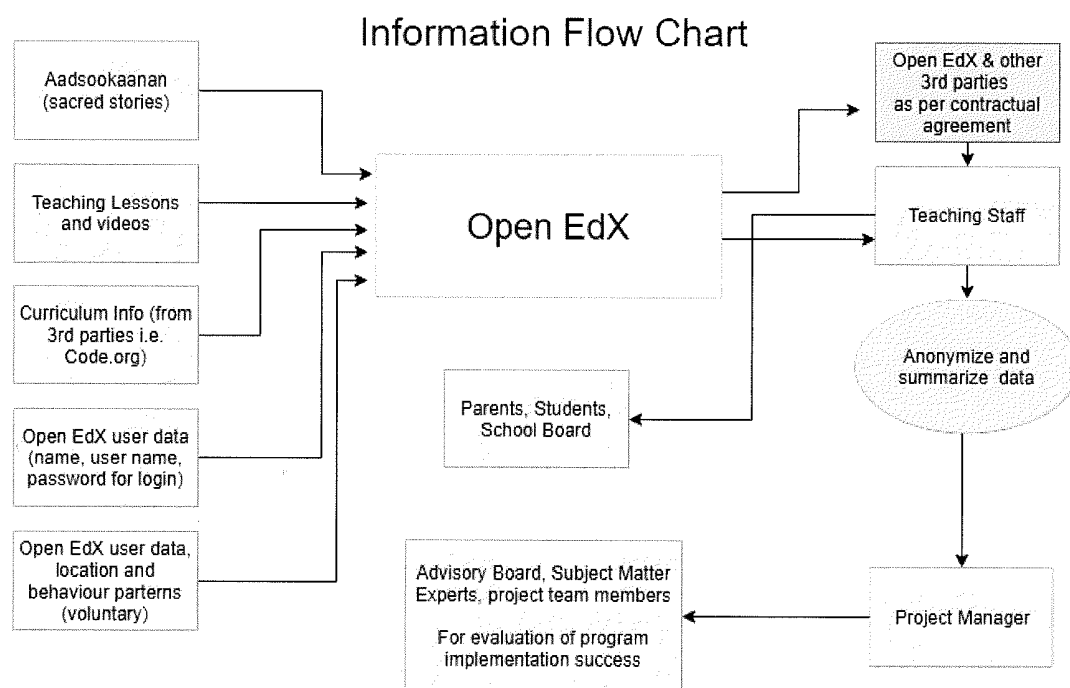
Role	Participant(s)	Responsibilities
Project Sponsor	Chief & Council	<ul style="list-style-type: none"> • Represent community • Provide project oversight and guidance as needed • Review/approve some project elements • Approve PIA
Subject Matter Experts	<ul style="list-style-type: none"> • Language consultant • Elders • Industry Partners • Teachers 	<ul style="list-style-type: none"> • Provide language expertise data • Provide cultural expertise data • Provide Curriculum Expertise data (STEM) • Participate in PIA process (ongoing)
Advisory Committee	Community and Industry Leaders	<ul style="list-style-type: none"> • Approve major funding and resource allocation strategies • Authorize significant changes • Resolve conflicts and issues • Provide clear direction to the Project Manager • Review project deliverables and milestones • Identify risks and mitigation strategies • Participate in PIA process (ongoing)
Project Manager	Band Administration	<ul style="list-style-type: none"> • Manage project in accordance to the project plan • Coordinate with Advisory Committee • Supervise consultants and SMEs • Provide overall project direction • Direct/lead team members toward project objectives • Handle problem resolution • Manage the project budget • Participate in PIA process (ongoing)

Role	Participant(s)	Responsibilities
Project Participants, incl. technical staff and admin support	<ul style="list-style-type: none"> Elders Teachers Language consultant Video production team Others to be identified by SC project Advisory committee 	<ul style="list-style-type: none"> Communicate project goals, status and progress to other participants, and project manager Review and approve project deliverables and be held accountable for milestones Create or help in creating work products (videos, written materials, curriculum). Coordinate participation of individuals, teams and stakeholders Evaluate outcomes and provide input on key performance indicators Helps identify and mitigate project risks Assure quality of products that will meet the project goals and objectives Achieve milestones on time and on schedule Participate in PIA process (ongoing)
Project Partners and Stakeholders	<ul style="list-style-type: none"> Community Industry Technology/software providers 	<ul style="list-style-type: none"> Direct participation from community members who wish to provide opportunities traditional learning activities. Indirect participation from industry and technology providers such as code.org, who we will engage for software and resources, but will have no direct involvement in the project. <p>Community and industry partners and stakeholders will not collect, use or disclose any personal information. The project team will work with Technology/Software providers, including Open edX to enter into a contractual agreement which will ensure personal information is handled in a privacy-compliant manner, and restricts the third party's use of personal information for purposes outside the project scope. In all cases we will advise users about a third party's privacy policies/statements if the user is being directed to a third-party site for additional links or resources, as part of informed consent process.</p>
Regulating Agencies	<ul style="list-style-type: none"> Government of Canada Government of Ontario 	<ul style="list-style-type: none"> Approval of PIA

BUSINESS PROCESSES AND INFORMATION FLOWS

The purpose of this section is to:

- Identify relevant businesses processes - both existing and planned - including changes to existing processes,
- Outline the key roles and responsibilities of the project team and the use of technology related to those business processes,
- Describe how personal information will flow through the business processes and technology,
- Describe how personal information will be collected, used, retained, disclosed, secured and disposed of, including changes to existing information flows, amounts or types of personal information involved and who will have access to the personal information and be responsible for it throughout its lifecycle



With respect to information flows, the following information will be provided to Open edX.

- Aadsookaanan
- Teaching Lessons and videos
- Curriculum
- Student name, user name, password (for access)
- Behaviour and location data (voluntary)

No additional information will be provided regarding the student's performance in other school programs. Again, this is a voluntary blended-learning environment (online and/or brick-and-mortar, but not online only) and therefore the intent is to not replace what is currently being done at the school level. All collection of student data will be limited to what is needed for educational purposes.

Teachers are the only project team members who can then access the student specific data. Behaviour data is required to make teachers being aware of how long a student struggled with a particular math problem, or how many times the student rewatched a video, and which sections of the video were rewatched, for example. This is one of the main benefits of using a blended-learning approach as this "behavioural pattern" data is what helps our teachers teach more effectively.

Teachers will then summarize the data and submit to the project team for performance monitoring and process improvements. Information collected by 3rd parties will be as per the contractual agreement. All terms of these agreements and risks to privacy resulting from 3rd party platforms and software will be communicated to users (and guardians) as part of the informed consent process.

PRIVACY ANALYSIS

The following table summarizes the results of our privacy analysis:

Process Statement	Process and Compliance measures
Purpose of the collection of personal information	<p>This project involves creating a blended learning environment with both online and real-world components. The nature of an online learning environment results in the collection of minimal personal information to create an account, name, user name and password. Additionally, certain functionalities of the Open edX platform, such as the meetup application or time spent watching videos, will also generate data on a user's location and behavior patterns.</p> <p>Another source of data is the videos, stories, overdubbing etc. that will be created for the language immersion education and STEM bilingual courses portion of the project. This data will be stored on the Open edX platform as well as in a redundant hard-copy format (i.e., transcripts, tapes, etc.) to ensure data is not lost. There are no additional privacy concerns associated with storing physical copies of the educational materials.</p> <p>All information identified is absolutely necessary for participating in the project and/or for monitoring the success of the project</p>
Source of personal information/ Accuracy	<p>Data will be collected directly by users to generate their profile and then tracked using their Open edX account. For example, it will be necessary to track users time spent watching video to provide assurance that the student has completed the necessary videos for completing the curriculum requirements.</p> <p>Given that the curriculum will be developed in a blended learning environment (brick and mortar and online) this will only include the collection of data related to activities completed in the Open edX platform. Activities completed within the brick and mortar school will continue to be tracked by teaching staff under existing processes.</p>

	<p>Qualitative data will also be collected by teachers for users to inform feedback on the project, monitoring, evaluation and control purposes. Personal information will be collected directly from the Open edX platform. Collection of data from teaching staff will be required and is appropriate given the context of this project</p> <p>Given that information is provided directly by the user through the online platform, we do not anticipate any major inaccuracies. Likewise, the anonymized and summarized data to be provided by teaching staff is subject to their current process which ensure accuracy and privacy of student information.</p>
Accountability and Openness	<p>The project team is accountable for the data collection, management and safeguarding results from this project. The project team has intentionally minimized the amount of personal information to be collected through use of Open edX platform, as users will only need to provide their name, user name and password to create an account.</p> <p>Likewise, we will implement a process that enables students and their legal guardians to provide informed consent to participate in this voluntary process, thus ensuring they understand what information will be collected, why, and who will have access to it.</p>
Manner of collection of personal information	<p>The data to be collected is minimal and relatively not intrusive. It is similar (if not identical) to the information already being collected and managed by the school system. Similarly, the information collected via the Open edX platform is typical for any online platform.</p> <p>Use of the meet up application is voluntary, and any users will be provided a privacy statement to agree to prior to using this forum (i.e. authorizing sharing of user location data)</p>
Limiting Use, disclosure and Retention	<p>Teaching staff are already subject to policies and codes of conduct that govern how they treat personal information, through to physical or technical controls that protect the information. Safeguards that will be into place include physical security; IT security; staff training; policies, confidentiality clauses in contracts with external providers etc.</p> <p>Information, such as language videos, transcripts etc. are to be stored indefinitely as these are important records of our language and traditional teaching that we are attempting to preserve as part of this project.</p> <p>Personal information will only be used for the purpose it was collected for, and as described in this PIA. The personal information collected for the students will only be retained until graduation. Following successful graduation, all student data will be removed from the server and student accounts will be disabled.</p> <p>The collection, use, retention and disclosure of personal data, and particularly student data, should always be limited to what is necessary to fulfil authorized</p>

	<p>purposes. Reducing the risk posed by the excessive collection of student data is a core principle that guides this project's data processing practices.</p>
Access and correction to personal information	<p>Users will be able to access the account information on the Open edX platform. Information collected by teachers will be subject to the policies and procedures currently in place in the school system. Information will be shared with students and parents through existing channels (i.e. report cards). Access logs will be implanted to track access to personal information.</p> <p>Teachers can correct their existing report card writing process based on information collected. For example, should a student choose not to use the meet up forum, the teacher would not reflect the true involvement in traditional activities in that student's grade.</p> <p>Requests for personal information to be corrected will be handled on a case by case basis. However, we do not anticipate any major concerns with meeting this principle as all information collected is basic in nature and expect most changes, if any would be minor in nature such as their name, username or password changes.</p>
Accuracy etc. of personal information	<p>Given that information is provided directly and automatically by the user through the online platform, we do not anticipate any major inaccuracies. Likewise, the anonymized and summarized data to be provided by teaching staff is subject to their current process which ensure accuracy and privacy of student information.</p> <p>The process for anonymizing the data will involve the teaching staff providing the project team a summary report detailing quantitative data needed to provide details needed to track and report on performance indicators. This will include:</p> <ul style="list-style-type: none"> • number of K-12 STEM courses successfully completed by K-12 students • number K-12 students needing remedial help in STEM subject areas • number of K-12 students who know the key concepts expressed in each of our core aadsookaanan • participation rate in number of traditional Nishnaabe activities for K-12 Students <p>No personal or identifying information will be shared, nor will it be required, by the project team. The summarized data, omitting all personal information, is required by the project team to track, monitor and evaluate the implementation of the project, and to make course corrections when necessary. Qualitative data will also be collected for teachers to provide feedback on the project, for monitoring, evaluation and control purposes.</p>
Data Disposal	<p>Data stored on the Open edX platform will be expunged following a student's graduation.</p>

Risk to Privacy Risk Strategy

Measures will be implemented to minimize risk as previously described. This includes policies for information flow, storage requirements, anonymized user names and a consent/privacy statement for users of Open edX as previously described.

Breach of Privacy Policy

The project team will develop and implement a breach response policy and protocol that addresses privacy and security risks for both the online and offline platform/storage methods.

Information custodians, namely Teaching staff, Chief and council, and the database administrator must immediately contact the to be named Privacy Officer, informing him or her of the following:

1. the nature of the breach;
2. the information that was exposed;
3. to whom it was exposed; and
4. for how long it was exposed.

The Information Custodian will work with the Privacy Officer who will advise whether notice to affected individuals and the Office of the Information and Privacy Commissioner of Ontario (IPC) is required. If such notice required, the Privacy Officer will work with the information custodian to meet the needs of the IPC.

Conclusions and next steps

The project team has completed the initial Preliminary PIA process. As the project is implemented the project team shall continue to:

- Refer to the International Conference on Data Protection and Privacy Commissioners resolution on eLearning Platforms in proceeding with our PIA
- monitor progress of privacy-related activities to make sure they are appropriately completed,
- assess any changes to the project's implementation, information flows, roles and responsibilities, to ensure that new privacy risks have not been created by these changes,
- evaluate mitigation measures to determine if they are effective when implemented; update or revise, if necessary,
- identify and assess new, outstanding and remaining privacy gaps and impact, and identify new action items required to address privacy risks,
 - alert the project lead and relevant decision-makers to any new privacy related problems, and obtain appropriate approvals to address or accept the privacy risks and
 - update or supplement the PIA documentation, as required, ensuring documentation of any newly identified privacy risks and impacts and how they arose, their likelihood, harm and priority for action and mitigation strategy to address the new privacy risks. The project lead and other appropriate decision-makers will approve all significant changes impacting privacy and the acceptance of any privacy risks.

Bridgewater
(as reviewed)

From: SC / VI (INFC)
Sent: March 7, 2019 12:00 PM
To: Jessica McDonald
Subject: Smart Cities Challenge - Successful Final Proposal Submission

Dear Jessica,

Congratulations! Your submission is ready to move onto evaluation following a completeness check (per the latest FAQs).

Thank you for your cooperation, patience, and hard work, especially during the past eight months. We are truly honoured to have worked with you and wish you the best of luck in the competition!

On a related matter, we have recently determined that it will not be feasible to post final proposals on the Infrastructure Canada website in a timely manner. Instead, we will take an approach similar to the application stage and publish your executive summary in both official languages on the Infrastructure Canada website with a link to the final proposal on your website. We understand that posting the final proposal on your website is not a requirement contained in the finalist guide so we appreciate your cooperation in facilitating access to your final proposal in an open and transparent way. Please note that the accessibility materials you have prepared for your final proposal will still be helpful in preparing various communications products to promote and share knowledge of your work.

Once you have posted your final proposal on your website, please send us the link if you haven't done so already. If you anticipate that you will be unable to post your final proposal on your website within two weeks, please let us know.

As always, we are happy to answer any questions. The best way to reach us going forward would be at our generic account: infc.sc-vi.infc@canada.ca.

Thank you.

Smart Cities Challenge Team
Infrastructure Canada
infc.sc-vi.infc@canada.ca

COMPLETE CHECK FOR FINAL PROPOSAL

FINALIST: Bridgewater				
ASSESSED BY: Amanda Aizlewood				
VALIDATED BY: Alex Long				
APPROVAL BY: select one: Jenny Tremblay / Eric Poirier				
DATE OF COMPLETION: enter date when all completed boxes are checked				
REQUIREMENTS	COMPLETED	IF NOT COMPLETED, NOTE REASON	GUIDING PRINCIPLES	ACTIONS
SUBMISSION				
Submitted to infsc-vi.infsc@canada.ca by 23:59 PST on March 5, 2019	<input checked="" type="checkbox"/>		<ul style="list-style-type: none"> No extensions will be granted No exceptions will be made for lateness or technical problems (finalist must be able to show evidence of submission) 	<ul style="list-style-type: none"> # to contact finalist If not resolved, # to flag to DG for decision
Final proposal is submitted	<input checked="" type="checkbox"/>		<ul style="list-style-type: none"> No extensions will be granted There is flexibility on the finalist video until the end of the week 	<ul style="list-style-type: none"> Assessor to save everything in designated folders # to contact finalist if anything is missing If not resolved, # to flag to DG for decision
Finalist video is submitted	<input checked="" type="checkbox"/>		<ul style="list-style-type: none"> There is flexibility on the finalist video until the end of the week 	<ul style="list-style-type: none"> Assessor to save everything in designated folders # to contact finalist if anything is missing If not resolved, # to flag to DG for decision
Preliminary Privacy Impact Assessment or Preliminary Rationale Analysis	<input checked="" type="checkbox"/>		<ul style="list-style-type: none"> No extensions will be granted 	<ul style="list-style-type: none"> Assessor to save everything in designated folders # to contact finalist if anything is missing If not resolved, # to flag to DG for decision
FINAL PROPOSAL				
Written in one of Canada's official languages	<input checked="" type="checkbox"/>		<ul style="list-style-type: none"> If the final proposal is submitted in a language other than English or French, a companion version in English or French is required from the finalist 	<ul style="list-style-type: none"> # to extract the executive summary from the final proposal and send it to translation (if a French final proposal, send the entire document to translation)
Generally readable (e.g. picture is not covering text, text are not overlapping)	<input checked="" type="checkbox"/>		<ul style="list-style-type: none"> If there are serious formatting issues that hinders readability, the finalist may need to resubmit 	<ul style="list-style-type: none"> # to do a scan of the final proposal and verify that all text and tables, graph, etc. could be read
Text-based and in either MS Word (.doc or .docx) or a fully readable, searchable, and selectable PDF (.pdf) format	<input checked="" type="checkbox"/>		<ul style="list-style-type: none"> Finalist may adjust the format for INFC posting purposes after the deadline 	<ul style="list-style-type: none"> # to verify with Comms if format is suitable for posting, given INFC web accessibility standards If not suitable, # to contact finalist
No longer than 75 pages* (Financial chapter exempted) and in 12 point font	<input checked="" type="checkbox"/>	177 total pages, of which 30 pages are Financial and 70 pages are Letters of Support. Font size is normal.	<ul style="list-style-type: none"> Finalist cannot adjust content after the deadline If the text overall is smaller than 12 point font, INFC will adjust and evaluate within the new page count 	<ul style="list-style-type: none"> # to notify finalist if final proposal is over 75 pages # to notify finalist if INFC had to adjust the font and page count

Contains an executive summary	<input checked="" type="checkbox"/>			<ul style="list-style-type: none"> # to QC and save translated version into the designated folder
Organized by these distinct chapters (not limited to these; not necessarily in the same order): <ul style="list-style-type: none"> Vision Performance measurement Project management Technology Governance Engagement Data and privacy Financial Implementation phase requirements 	<input checked="" type="checkbox"/>	<i>Annex of 70 pages included with letters of support.</i>	<ul style="list-style-type: none"> Finalist must have these chapters Finalist can have more chapters Finalist can change the order of the chapters 	<ul style="list-style-type: none"> If the chapters are not clearly labeled, # to do a light analysis of where the content may be and make a note for the Jury
FINALIST VIDEO				
No longer than five minutes	<input checked="" type="checkbox"/>		<ul style="list-style-type: none"> Finalist may cut down the time for INFC posting purposes after the deadline 	<ul style="list-style-type: none"> # to notify finalist if video is longer than five minutes and needs cutting down
Submitted as a file or in a downloadable format	<input checked="" type="checkbox"/>		<ul style="list-style-type: none"> Finalist may adjust the format for INFC posting purposes after the deadline 	<ul style="list-style-type: none"> # to verify with Comms if format is suitable for posting, given INFC web accessibility standards If not suitable, # to contact finalist
CONFIDENTIAL ANNEX (OPTIONAL)				
Submitted if and only if required	<input checked="" type="checkbox"/>	Two pages.		<ul style="list-style-type: none"> # to flag with DG if confidential annex is lengthy

From: SC / VI (INFC)
Sent: March 7, 2019 2:42 PM
To: Leon de Vreede
Cc: Jessica McDonald
Subject: RE: Error corrections

Hi Leon,

Unfortunately, we are not able to make changes to your final proposal after the deadline for evaluation purposes in order to remain fair to all finalists.

Thank you for your understanding, and thanks for sharing how this came to be.

Smart Cities Challenge Team

Infrastructure Canada
infsc-vi.infc@canada.ca

From: Leon de Vreede [mailto:Leon.deVreede@bridgewater.ca]
Sent: March 7, 2019 2:01 PM
To: SC / VI (INFC) <infsc-vi.infc@canada.ca>
Cc: Jessica McDonald <Jessica.McDonald@bridgewater.ca>
Subject: Error corrections

Good afternoon,

If we notice errors in our submitted application, will there be any opportunities to correct them? In our case, we have just noticed an error in our financial spreadsheets.

You may be interested to know that the error was caught by a sharp-eyed community member who would not have seen it if we had not made the full application public, which reinforces the value of the openness and transparency requirements of the process.

Thank you,
Leon

Leon de Vreede, MCIP, LPP
Sustainability Planner
Planning Department



T: 902-541-4390
F: 902-543-6876
E: Leon.deVreede@bridgewater.ca

60 Pleasant Street

From: Leon de Vreede <Leon.deVreede@bridgewater.ca>
Sent: March 5, 2019 7:21 PM
To: SC / VI (INFC); Long, Alexander (INFC)
Cc: Tammy Crowder; Jessica McDonald
Subject: Final Proposal - Town of Bridgewater (1/2)
Attachments: Town of Bridgewater Preliminary PIA.pdf; Town of Bridgewater Confidential Annex.pdf; Town of Bridgewater Final Proposal to SCC.pdf

Dear Sir/Madam:

This email contains part 1 of 2 of the Town of Bridgewater's final submission to the Smart Cities Challenge in the \$5 million prize category. We are submitting 5 attachments in total.

Main Submission Components

- **Town of Bridgewater Final Proposal to SCC** – a PDF file containing our final proposal as a single consolidated document. Pages 1-75 include the executive summary and 8 chapters; pages 76-177 include the Financial chapter plus an appendix containing 40 letters of support.
- **Finalist Pitch Video** – you can view and download a high resolution copy of our 5-minute finalist pitch video from the following link: <https://vimeo.com/321294190/8b58aaaced>. The video is available for viewing as of this email and will be available to download as of 23:59 PST on March 5, 2019.
- **Preliminary Privacy Impact Assessment** – a PDF file containing the preliminary PIA on our program. It is 46 pages in length. We understand that it is excluded from the page count.
- **Confidential Annex** – a PDF file containing an introductory page and a single letter of support from a confidential source. It is 2 pages in length. We understand that it is excluded from the page count.

Accessibility Materials – see email 2 of 2.

Point of Contact

Please see below the e-mail and phone number of a point of contact with whom the Smart Cities Challenge team can communicate with from March 5, 2019 until the announcement of winners:

- Jessica McDonald, Director of Community Development, Town of Bridgewater:
Jessica.McDonald@bridgewater.ca / 1-902-541-4368

Kindly confirm receipt of these 2 emails, including their five (5) attachments.

Thank you,
Leon

Leon de Vreede, MCIP, LPP
Sustainability Planner
Planning Department



T: 902-541-4390

F: 902-543-6876

E: Leon.deVreede@bridgewater.ca

60 Pleasant Street
Bridgewater, NS B4V 3X9

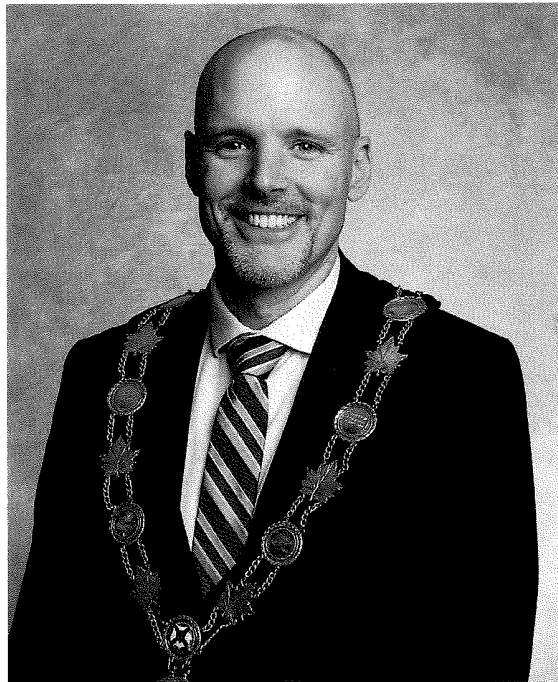
Think green - print responsibly

ENERGY POVERTY REDUCTION PROGRAM

Final Application to the
Smart Cities Challenge
\$5M Prize Category



MESSAGE FROM THE MAYOR



Mayor David Mitchell

Our community will lift its residents out of energy poverty, starting by reducing the energy poverty rate by 20% by 2025.

As Mayor of the Town of Bridgewater, that is a challenge statement that makes me proud to serve my community. The fact is, Bridgewater is ready for a massive shift toward a smart energy economy by becoming a Smart Community. Through our Energize Bridgewater program, our community has demonstrated nationally-

recognized leadership in understanding and planning a pathway toward a new kind of energy economy – one where energy services are universally available and affordable, clean and efficient, and protected from supply volatility and the coming ravages of climate change.

Through our proposed solutions, we will make sure that those among us who are most vulnerable, and least able to afford the transition, are the first ones we help across the threshold. Those residents have the most to lose, and through the betterment of their lives, our community has everything to gain.

The stories shared by our community partners and residents have made it clear that energy poverty is having a profound and debilitating impact here in Bridgewater. It systematically strips as many as 40% of our residents of their dignity and damages the physical and mental wellbeing of young and old alike.

Yet, the real, lasting, and practical solutions to this problem are so close at hand that we can already see them emerging. Through this Challenge, our town will design and prototype a new model of municipally-led accessible and affordable energy management services for our community's most vulnerable residents. Dramatic improvements to housing, transportation, and community services will be

driven by a self-financing investment program and a coordinated access system, all powered by connected technologies.

We've been innovative. We've been bold. We've made change happen. However, nothing we've done to date has come close to achieving the impact of our proposed Energy Poverty Reduction Program. At the same time, everything we've done to date has prepared us to make this leap.

We need help in launching this bold idea. By selecting Bridgewater as the winner in the \$5 million Smart Cities Challenge prize category, Canada will support a powerful new demonstration of technology-enabled community-based problem solving that addresses both the poverty crisis and the climate crisis at the same time. Bridgewater is ready to show Atlantic Canada, and the nation, how it can be done.

David Mitchell
Mayor, Town of Bridgewater

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EXECUTIVE SUMMARY

Our community will lift its residents out of energy poverty, starting by reducing the energy poverty rate by 20% by 2025.

Bridgewater's growing need for clean and reliable energy is limited by our ability to afford it. Our estimates show that the burden of energy poverty is carried by 38% of Bridgewater households that are unable to meet their basic energy and transportation needs. Many more are at risk of falling into this category as it's expected that energy prices will continue to trend upwards. Bridgewater is approaching this issue through systematic change at a household, neighbourhood, community, and regional level by, treating access to affordable and secure energy as a requirement for healthy living. To ensure residents can live free of the constant threat of energy poverty, our program uses energy management as a smart city approach for resident empowerment.

Bridgewater envisions an Energy Poverty Reduction Program that uses data and connected technology to bring together and drive energy savings to create financial returns for households and property owners. This system also provides coordinated access to community supports for households experiencing energy poverty. And finally, a financial system that supports extensive investment in energy efficiency solutions. Bridgewater's impactful, comprehensive approach

to community-based problem solving and transformational change is highly transferrable to communities across the country that are struggling with energy poverty challenges of their own. Municipalities are uniquely positioned to be at the forefront the of shifting world of energy systems, pairing data and connected technologies for community services that ensure underserved populations are the first beneficiaries of the energy transition.

- 1. Vision:** why this matters, and overview of services
 - 2. Performance Measurement:** detailed program descriptions, deliverables, and outcomes
 - 3. Governance:** accountability structure, and program partners
 - 4. Project Management:** team members and risk management
 - 5. Technology:** data platforms, connected technologies, and energy solutions
 - 6. Data and Privacy:** how information will be used, safeguarded, and shared
 - 7. Engagement:** community consultations up to now, and going forward
 - 8. Implementation Phase Requirements:** fulfilling national expectations
 - 9. Financial:** costs, revenues, innovative financing solutions, and how we used the Finalist Grant
- Appendix:** letters of support

TOWARD A FUTURE FREE OF ENERGY POVERTY

Bridgewater, like most communities across Canada, has a growing hunger for energy. Our energy needs are everywhere – cellular phones, warm showers, food refrigeration, heat during the frigid winters, lights, laundry, and computers. With our energy needs increasing, many households in Bridgewater are unable to afford the rising costs of this service and are having to make impossible decisions to balance monthly household budgets.

As a 'have not' province, Nova Scotia has struggled for decades with the issue of widespread poverty and low incomes. Given our region's and our community's overall economic challenges, energy insecurity adds a real and growing threat to our ability to meet our basic needs. When we asked our community partners to tell us how urgent energy poverty issues are in relation to other issues in Bridgewater, Family Service of Western Nova Scotia stated: "this may be the least talked about yet most significant and productive structural, community, and individual issue we could tackle." The challenge of energy poverty is daunting and overwhelming, yet the

¹ This model of energy poverty aligns well with the Social Determinants of Health and other health risk and inequality models used by modern public health initiatives including Health Canada.

Town of Bridgewater is firmly convinced that it is possible to create a solution to both the poverty crisis and the climate crisis by using technology-enabled community-based problem solving.

Energy poverty isn't just lingo for Bridgewater – it is a real problem for real people. Our program team has spent considerable effort in defining this term to be meaningful to our residents, especially those who identify with its hardships. In our initial application, we **defined energy poverty using the indicator of a household spending 10% or more of its after-tax income on energy, with fuels and electricity for the home as well as transportation counting toward energy expenditures.** We maintain that this definition is accurate, but understand that energy poverty can also be so much more.

Systematic Levels of Energy Poverty Risk

Risk Level	Description
1. Household	Household-level risk factors include personal risk influences such as the energy efficiency of the home and transportation means as well as general poverty risk factors such as income, health, literacy, family supports, etc.
2. Neighbourhood	Neighbourhood-level risk factors include neighbourhood energy systems, walkable streets, transit service, etc., as well as the energy efficiency of multi-unit residential buildings (MURBs).
3. Community	Community-level risk factors include community-scale energy and transportation systems, the energy efficiency of the overall housing stock, community support services, social stigma, and whether the community has developed a coordinated response to the problem of energy poverty.
4. Broader Systems	Broader systems-level risk factors include the price of energy in the region; the availability of secure, affordable energy technologies; employment opportunities; economic diversity, etc. It also includes provincial and federal programs and policies that may remedy or exacerbate energy poverty.

Table 1.1

Bridgewater and its community further defines **energy poverty based on access to affordable and secure energy in their home, neighbourhood, community, and region. The greater the degree of insecurity or lack of access, the greater the risk that the household will experience energy poverty**¹ This shift in perspective lifts the burden of energy poverty mitigation from being focused solely on the individual household, toward including community and regional infrastructure and services.

With this new emphasis on risk for energy poverty, research was required to determine what exactly the risk factors are and how this affects Bridgewater's vulnerability. Table 1.1 describes the energy poverty risk factors identified by our community.

As Bridgewater gained a greater understanding of energy poverty during the final application phase, the breadth of its impact on our community became startlingly clear. Early research indicated that as much as 40% of Bridgewater's population may be experiencing energy poverty in some form. A community census was undertaken to validate residents' lived experience with energy poverty. From that census, we can confirm that 38% of residents currently experience, or are highly at risk of, energy poverty. Add to that the recent Statistics Canada report that the number of Nova Scotian children in poverty has risen from 14% in 2016 to 17% in 2017² and it is very clear that the problem of poverty in our community is not going away and requires urgent and responsive action.

Bridgewater is a community driven to overcome our challenges through deep engagement and innovative projects. To demonstrate our sincerity in creating real and meaningful change, Bridgewater commits itself to the following Challenge Statement:

Our community will lift its residents out of energy poverty, starting by reducing the energy poverty rate by 20% by 2025.

² Statistics Canada, accessed on February 28, 2019 <https://www150.statcan.gc.ca/t1/tbl1/en/cv.action?pid=1110013501>

Targeted Energy Poverty Reduction Rate by Program Year

Year	2020-21	2021-22	2022-23	2023-24	2024-25	2029-30 After 5 more years
Population (projected)	9,031	9,156	9,211	9,266	9,320	9,583
Households Experiencing Energy Poverty (projected, based on current 38.5% energy poverty rate)	1,659	1,682	1,692	1,702	1,712	1,760
Number of Households Helped (Cumulative)	0	50	125	225	350	1,100
Energy Poverty Rate Reduction (Cumulative)	0%	3%	7%	13%	20%	62%

Table 1.2

With a five-year implementation horizon for the Smart Cities Challenge, the community has designed a program that will reduce the energy poverty rate in Bridgewater by 20% by 2025, while maintaining the long-term goal from the original challenge statement to lift 20% of its residents out of energy poverty within 10 years. With a \$5 million grant from Smart Cities Challenge, the Town is confident that change can be realized within a single generation. And with a revised start date of 2020, the Town is eager to begin this very important work.

Based on the current and projected future population of the community, our Challenge

would mean lifting 350 households out of energy poverty by fiscal year 2024-25. The community would then be on track to cut its overall energy poverty rate in half by 2028, and by as much as 62% over a 10-year timeframe (by fiscal year 2029-30). Our anticipated progress is illustrated in Table 1.2.

The Town of Bridgewater envisions a future for our community where energy poverty reduction strategies work in tandem with clean and efficient energy systems to confront energy poverty at its core – the very source of the energy itself. With assistance from the Smart Cities Challenge, we will overcome existing barriers to achieve our community vision:

By 2050, Bridgewater's green, self-supportive economy will be securely powered by clean and efficient energy systems. The community's conscious investments into energy infrastructure, equipment, training, and education will make energy affordable and accessible for all members of the community, and contribute to our town's prosperity and resilience in the face of a changing climate and world.

- Bridgewater's Energy Shift vision, Community Energy Investment Plan (2018)

Our commitment to this project will empower our community to take a leadership role in combating energy poverty, which is a daily threat to our sustained health and economic viability. The energy poverty solution is our most ambitious vision to date and we can't wait to show the rest of Canada that even small towns like Bridgewater can lead a change of this magnitude.

ENERGY MANAGEMENT AS A SMART CITY APPROACH

Households experiencing energy poverty know first-hand the critical importance of managing their energy consumption and therefore their expenses. The stories we have collected from the community have been truly stunning in this regard: we have documented families turning off their heat for days at a time in the middle of winter

to be able to afford their next power bill, or going without light and powered devices at the expense of their health and wellbeing. From an energy management perspective, this has informed us that Bridgewater residents who experience energy poverty often already have well-practiced skills in energy management. What they tend to lack is energy efficient home heating systems and other infrastructure to work with, and adequate control over their home and transportation options.

I reduced my power bill from \$120 to \$60 by unplugging everything when I am not using it. I don't really use lights, only when company is over. I use my phone as a flashlight. – RESIDENT, TOWN OF BRIDGEWATER

Bridgewater's Energy Poverty Reduction Program is well matched to a smart cities approach, as it aims to restore control to our residents over their energy costs and infrastructure by leveraging the fundamental benefits that data and connected technology have to offer. Throughout this application we will reinforce how a small town can be a smart city by showcasing:

- how data can be used to create open and strong communities inclusive of the most vulnerable members and how access barriers to this data can be overcome (See **Data and Privacy chapter**);
- how data and connected technology can

be a uniting force to bring together the municipality, other levels of government, government organizations, and private enterprise (See **Technology chapter**);

- how the innovation of one community can be transferable to our neighbours across the nation (see **Performance Measurement and Project Management chapters**);
- how connected technology enables collaboration between service providers and industry for the betterment of society (See **Governance chapter** and **Data and Privacy chapter**).

Through the program, the Town of Bridgewater will provide advanced new **energy management support services** to 2 primary clients:

1. Bridgewater households who are highly at risk of energy poverty, currently estimated at 38% of Bridgewater's population.
2. Bridgewater property owners whose properties are inhabited by households-at-risk of energy poverty. Housing energy efficiency is a key risk factor in determining whether or not a household will experience energy poverty. Groups of property owners can be clustered together to receive neighbourhood-scale energy services and solutions.

In situations where the households-at-risk own the homes they live in, the two clients are one and the

same. For a large number of households-at-risk, however, home ownership is not affordable, and rental housing is their only option. In this case, the property owner is the household's landlord. In Bridgewater, 43% of residents rent their home (Statistics Canada, 2016). We anticipate that the majority of property owners in the program will be landlords.

As we explain in the rest of this application, the Energy Poverty Reduction Program builds on existing municipal service competencies, data systems, and infrastructure. As such, this service concept is widely replicable and transferrable to other communities where municipalities already play a critical role in community service provision.

For those experiencing energy poverty, access to the technology and data to manage their energy needs is often very limited. For the most vulnerable, interfacing with a human rather than a dashboard is the most practical way to assist with assessing their needs and solving the immediate problems caused by energy poverty. Not having or being at risk of losing their shelter, these residents will need access to a range of community, health, employment, and other services, not just services that relate to housing and transportation.

The program will establish navigators for the different system components of the Energy Poverty Reduction Program. These navigators

will be human interfaces for households-at-risk, connecting them with the services they need, including the energy management services offered by the Town of Bridgewater. Coordinated Access Systems are widely replicable and transferrable to other communities. Additional information is provided in the following chapters.

INNOVATION AT THE CORE

The design of the Energy Poverty Reduction Program combines 3 innovative mechanisms to reduce risk of energy poverty:

1. Connected technologies: forming the backbone of the service concept, connected technologies provide a technological 'engine' that drives energy

savings to create financial returns for the households and property owners, and streamlines client intake and access to community services.

2. Coordinated access: a social support 'engine' that keeps clients connected to the program and coordinates access to the various additional community supports households-at-risk may need.
3. Financial investment: building on Bridgewater's experience developing a fully-costed approach to energy transition, self-financing energy improvements provide a financial 'engine' that supports extensive investment in energy efficiency solutions.



Community Working Group members view a presentation at a Smart Cities Challenge workshop.

Core Design Innovations

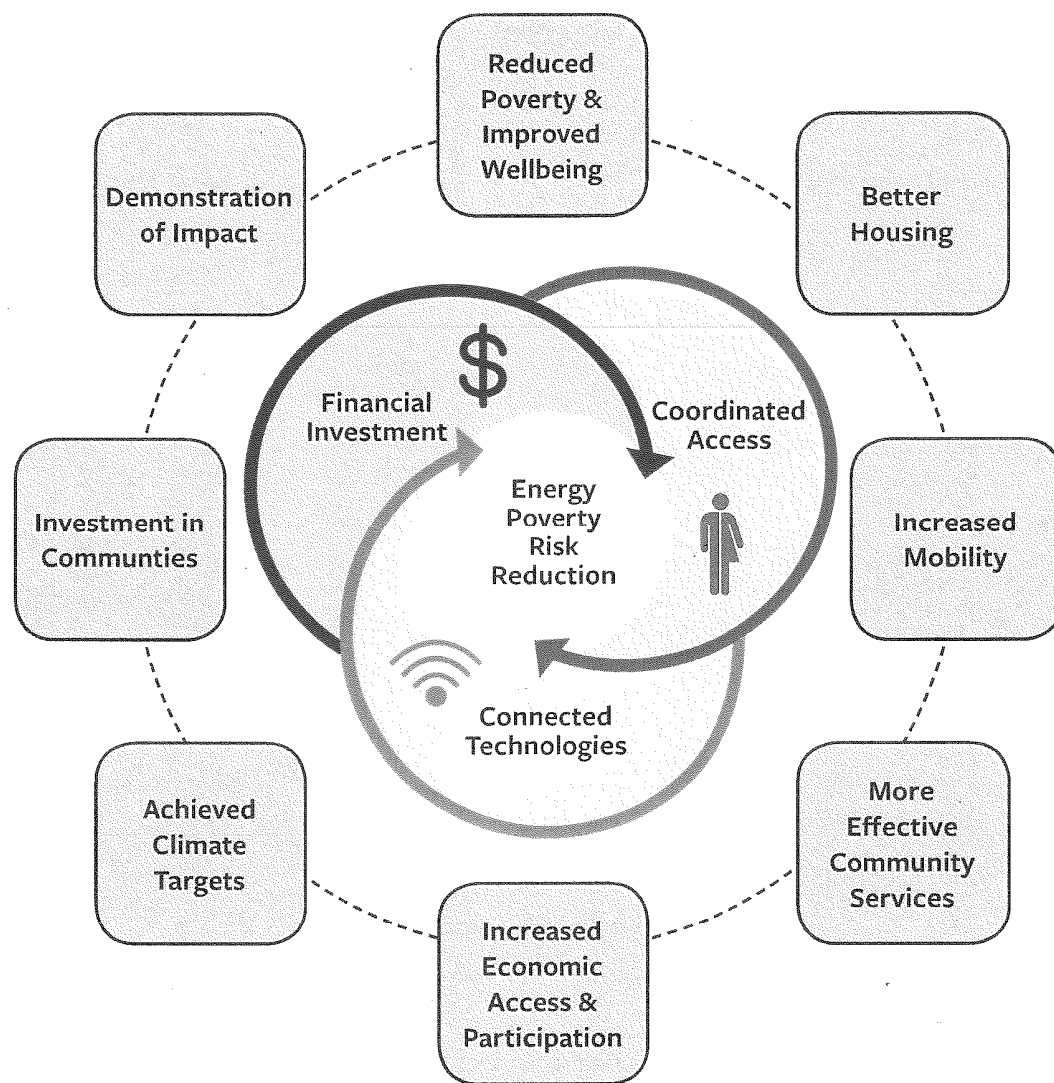


Diagram 1.1

These 3 innovations mutually enable and strengthen each other's outcomes. This synergy drives systematic and continuous improvements to housing, transportation, and community services, thereby reducing energy poverty risk and improving many dimensions of community life. These innovations and their anticipated outcomes are captured visually in Diagram 1.1.

A GREATER COMMUNITY IMPACT

Starting with our initial application, we have embarked on a deep and meaningful discussion with our community. From households-at-risk, to community service organizations, to landlords and energy utilities, the Town has listened to lived experiences in our community and developed a program that will positively impact a multitude of community needs. Consequently, our program outcomes have grown substantially. Table 1.3 summarizes the anticipated outcomes by category, and indicates their relationship to our initial application:

The expanded outcomes demonstrate a greater understanding and articulation of our Challenge to lift our residents out of energy poverty. Cumulatively, they reflect the community's urgent call for transformative change at all levels to achieve this goal. The outcomes are transferrable to other communities with very different local and regional contexts compared

Anticipated Outcomes by Category

Outcome Category	Outcomes	Relation to Initial Application (April 2018)
Reduced Poverty & Improved Wellbeing	1. Reduce energy poverty rate	Challenge statement
	2. Reduce poverty	New
	3. Improve health of residents	Outcome 6
	4. Increase residents' quality of life	New
	5. Increase residents' sense of empowerment and inclusion	New
Better Housing	6. Increase energy security for residents	New
	7. Reduce and stabilize energy expenses for residents	Outcome 4
	8. Improve relationship between tenants and landlords	New
	9. Improve residential energy management practices	New
Increased Mobility	10. Improve residents' mobility	Outcome 3
More Effective Community Services	11. Improve residents' access to community services	New
	12. Improve community service delivery efficiency and effectiveness	Outcome 7
	13. Shift community service spending toward systemic solutions	Outcome 8
Increased Economic Access & Participation	14. Increase residents' income	Outcome 8
	15. Increase residents' participation in the green economy	Outcome 8
Achieved Climate Targets	16. Reduce greenhouse gas emissions	New
	17. Shift to efficient, clean, affordable, and secure energy	New
Investment in Communities	18. De-risk affordable energy investments in the community	New
	19. Successfully fund energy poverty reduction solution	New
Demonstration of Impact	20. Demonstrate feasibility and effectiveness of program	New
	21. Inspire structural energy poverty solutions at the Provincial and Federal levels	New
	22. Inspire other communities to adopt energy poverty reduction efforts	New

NOTE: No outcomes have been lost between the initial and final applications. Outcome indicators and targets are described in detail in the **Performance Measurement chapter**.

Table 1.3

to Bridgewater. While other communities may need to make modifications to the specific indicators used to measure progress based on locally available information, the outcomes are universally meaningful, measurable, monitorable and well-suited to a smart cities approach.

APPLICATION REFINEMENTS TO BETTER ACHIEVE OUTCOMES

In order to lift our residents out of energy poverty, the design of the Energy Poverty Reduction Program has undergone significant improvement and refinement. Whereas it was originally proposed as a set of 7 interlocking sub-programs, the updated program design has been simplified into a set of 5 connected services, designed with universal transferability and application to other communities in mind.

Program services are explained in the sections that follow:

Coordinated Access System

This service provides a single coordinated intake process for program participants, with a special focus on households-at-risk who may be in need of acute and emergency services, underserved subpopulations, as well as those who can benefit from preventative services. A common assessment tool (VI-SPDAT³ or similar) aids the intake and referral process, and encourages

uniformity within and between communities. Using a trauma-informed service provision lens and specialized training, multiple system access points and outreach services refer new and

existing clients to any community services they may require, including: protective; health; social; housing and emergency shelter; transportation; financial; employment; education and training;

accessibility; and other related community and government services. Among these services are the services provided by the Energy Poverty Reduction Program.

Energy Poverty Reduction Program Architecture

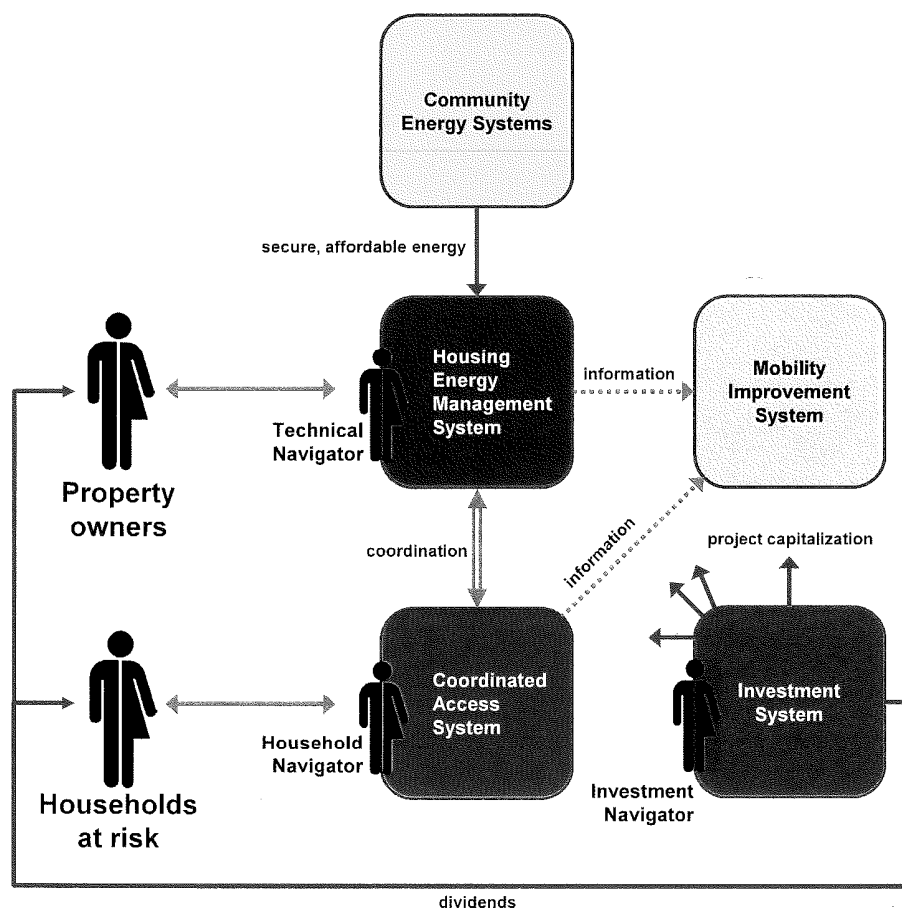


Diagram 1.2

The service consists of 2 sub-programs that are explained in detail in the **Performance Measurement chapter: Partnership Coordination, and Coordinated Access Service Provision.**

Communities that already have a Coordinated Access System in place can leverage those existing services.

Relationship to Data & Connected Technologies: we propose that this service make use of the nationally-accessible Homeless Individuals and Families Information System (HIFIS), hosted by Employment and Social Development Canada (ESDC), as its core data platform. This will facilitate data exchange with community service providers as well as the municipal data platform that will house the rest of the Energy Poverty Reduction Program. The use of this national database would also facilitate inter-community collaborations and performance metric comparisons.

³ Developed by Org Code Consulting, this assessment tool is widely used in Canada for planning and prioritizing service provision to underserved populations particularly for housing and shelter needs. The tool is already in use in Bridgewater.

Housing Energy Management System

This service provides property owners with turn-key energy monitoring, planning, management, retrofit, and financing services. Services address retrofits to existing housing stock, as well as services and incentives to support the construction of highly efficient new housing units. The target of the program is to achieve a universal energy performance improvement of the community's housing stock of approximately 60%, and to further supplement that with an additional 30% in renewable energy generation, for a total imported energy cost reduction of 90%. Individual energy performance targets will be set for participating properties as part of the client intake process, and will be updated periodically as new energy management solutions become available.

The service consists of 3 sub-programs that are explained in detail in the Performance Measurement chapter: **Program Coordination & Administration, and Housing Retrofits and New Construction.**

The service is designed to leverage existing municipal competencies in asset management and service provision. It also enables communities to leverage and stack existing and emerging energy efficiency programs, whether those have been implemented on the municipal, provincial,

or federal levels. In Bridgewater's case, the programming offered through this service will build heavily on, and significantly expand, Efficiency Nova Scotia's energy efficiency services and financial incentives aimed at improving the province's housing stock.

Relationship to Data & Connected

Technologies: existing municipal property and financial management software will be used as the core data platform for this program, with the addition of an Energy Management Information System (EMIS) module, and an expansion into Real Time Operations (RTO) functionality. The EMIS interfaces with a network of connected technology points to provide the core energy management functions of energy monitoring, forecasting, and control. The system's functionality is expanded gradually over time as new energy management solutions and community energy systems come online. In Bridgewater's case, the proposed data platform is TownSuite, the Town's current municipal management software.

Community Energy Systems

Supplementing energy improvements in individual homes, this service plans and develops neighbourhood and community-scale energy systems such as solar farms, district heating systems, and microgrids. These systems feed

secure and affordable energy to participating properties, and earn dividends for their investors. The service consists of 2 sub-programs that are explained in detail in the **Performance Measurement chapter: Utility Grade Service Provision, and Neighbourhood & Community Scale Energy Systems.**

Communities with their own energy utilities can leverage those existing services to deliver these functions. As community-scale energy solutions will differ based on local and regional context, specific applications need to be tailored to the needs of individual communities. In Bridgewater's case, the community is in the process of exploring the development of its own energy utility, as well as the potential procurement of utility-grade services from an existing utility in the area. Feasibility studies for the selection and implementation of community-scale energy systems are included in the first few years of the program, with a 6MW "solar garden" as the preliminary choice for community-scale energy technology in this proposal.

Relationship to Data & Connected

Technologies: community-scale energy systems are powered and controlled by connected digital systems, allowing for a new generation of advanced net-metering, microgrid, and local energy market applications. These functions can effectively integrate into the

municipal property and financial management software described above.



This service receives information from the Coordinated Access System and the Housing Energy Management System to plan and implement

mobility improvements based on community needs. As municipalities are typically responsible for neighbourhood and community-scale transportation systems, this service will typically integrate with and expand on existing municipal services.

The service consists of 2 sub-programs that are explained in detail in the **Performance Measurement** chapter: **Program Coordination & Administration, Transit System Improvements**, and **Active Transportation Improvements**.

Communities with their own road, trail, and public transit infrastructure would tailor this service to their own infrastructure and services, which may also include regional transportation planning. In Bridgewater's case, intra and inter-community public transit services and active transportation infrastructure improvements are the primary areas of focus, though paratransit and ride sharing services may eventually form part of the service planning model as well.

Relationship to Data & Connected

Technologies: mobility improvement planning efforts are enhanced by the use of data from the Housing Energy Management System and the Coordinated Access System through the use of spatial data and transportation network routing and planning, as well as mobility indicators and feedback from clients. These functions can effectively integrate into the municipal property and financial management platform.



This service funnels funds from investors into the services described above. Program investors are categorized into (1) social value investors, which

include governments and charitable organizations, and (2) financial investors seeking a return on investments from housing and community energy systems. Using creative financing tools, property owners and households-at-risk can also become investors in the system and receive dividends.

The service consists of 2 sub-programs that are explained in detail in the **Performance Measurement** chapter, and expanded on in the **Financial** chapter: **Municipal Capitalization System**, and **Financial Investment Vehicle**.

This service builds on existing municipal competencies related to budgeting and asset

We can't judge people like 'How did you forget your child's mittens today?' when there may be water coming in their window, the landlord may not be available; they may be cold, they may be hungry.

– COMMUNITY SERVICE ORGANIZATION

management. Communities that work closely with external fundraising entities can leverage those relationships to build this system, and those municipalities that are permitted by legislation to use innovative capitalization strategies (e.g. community bonds or green bonds) may make use of those capitalization opportunities as well. In Bridgewater there is no existing Financial Investment Vehicle to leverage, so the implementation of this service includes a period of feasibility assessment and organizational development. Emerging energy financing services, including Energy Services Companies (ESCOs) are anticipated to play a significant role in the capitalization of these improvements both in Bridgewater and across the country.

Relationship to Data & Connected

Technologies: financial planning efforts and investment opportunities are calculated and driven by the robust EMIS system that forms the core function of the program's data system. Financial planning and management for the

program can effectively integrate into the municipal property and financial management software described above. External financial investment systems will rely on external data platforms. In Bridgewater's case the external platform still needs to be determined, though for planning and budgeting purposes, the MaRS Centre for Social Innovation's SVX platform is used as the placeholder system for this service.

The relationship between these revised programs and those described in the initial application are summarized in Table 1.4.

The restructuring of the Energy Poverty Reduction Program has significantly improved its implementation potential, as well as improved transferability, scalability, and replicability to other communities.

Original and Revised Program Components

Program Components As Originally Proposed (April 2018)		Revised Program Components
Theme 1: housing and transportation investments	Program A: local clean energy investment system	Investment System
	Program B: comprehensive retrofit improvement program for low-income homes and rental properties	Housing Energy Management System
	Program C: regulations and incentives for the construction of new high-energy-performing affordable rental units	Housing Energy Management System
	Program D: public transit and active transportation service and infrastructure improvements	Mobility Improvement System
Theme 2: resident engagement and capacity building	Program E: engagement program for residents*	Coordinated Access System and Housing Energy Management System
	Program F: clean tech sector trades training program for residents	N/A
Theme 3: partner collaboration and capacity building	Program G: data sharing and collaboration program for partner organizations	Coordinated Access System

Table 1.4 *Program F, the clean tech sector trades training program for residents, was found to be impractical at this time, as local trades training organizations were unable to commit to trades training outcomes and timelines. Instead, the Nova Scotia Community College has provided a letter (see **Appendix**) indicating its ongoing support for the Energy Poverty Reduction Program, and its willingness to explore integration with its Work Integrated Learning courses, the Women Unlimited program, and participating in the Coordinated Access System in order to provide information, where applicable, around training opportunities. The College continues its interest in the creation of new programming options in the areas around Green Energy and Technologies, but this will require additional study and development before the College is able to confirm its offerings.

INNOVATIONS SUITABLE FOR NATIONAL DEMONSTRATION

This high-impact, comprehensive approach to community-based problem solving and transformational change is highly transferrable to communities across the country that are struggling with energy poverty challenges. As the world shifts its energy systems, these transitions will be inherently challenging as economic disruption occurs and less affluent Canadians are saddled with the remnants of outdated or legacy energy systems, whether those are housing technologies or energy systems from the last century. Municipalities are uniquely positioned to take advantage of emerging energy systems, pairing them with data and connected technologies, and delivering robust and accountable services that improve affordability and quality of life for historically underserved populations. In this way, municipalities can play a critical new role in facilitating a transformation for our communities, especially their most vulnerable members, through the coming energy shift.

By selecting Bridgewater as the winner in the \$5 million Smart Cities Challenge prize category, Canada will support a powerful new demonstration of technology-enabled community-based problem solving to its stated objectives of addressing both the poverty crisis and the climate crisis at the same time.

PERFORMANCE MEASUREMENT OVERVIEW

To support the ambitious scope and complexity of Bridgewater's Energy Poverty Reduction Program, we have developed a methodical implementation and performance measurement schedule. The following section outlines the activities and outputs, including deployment schedule and anticipated deliverables for each of the 5 systems that form the overall Energy Poverty Reduction Program: Coordinated Access; Housing Energy Management; Community Energy; Mobility Improvement; and, Investment.

An evaluation framework is proposed and detailed in Table 2.9. A logic model consisting of activities, outputs, and outcomes has been developed to guide the implementation process and allow for ongoing evaluation of program performance and quality. This logic model is illustrated in Diagram 2.1. Table 2.10 details the program outcome indicators, associated measurement methodologies and tracking systems.

Risks associated with the Energy Poverty Reduction Program are comprehensively described in the **Project Management chapter**, which also includes the risk management strategies and associated course correction checkpoints for the program.

PROPOSED PHASING AND PAYMENT SCHEDULE

As detailed in the **Project Management chapter**, progress toward our outcomes are being consistently monitored and measured. To implement the program and achieve the outcomes described above, we propose to receive Infrastructure Canada's grant contribution in 3 installments that are closely tied to the program budget. The contribution amount will cover core program costs (development, administration, and operations, minus any municipal in-kind contribution).

The Energy Poverty Reduction Program consists of a set of 5 interconnected systems that will be deployed in 4 phases; each building off each other with some overlap in the early phases. As a small community with limited resources and no ability to draw significantly from the tax base to implement the program's development, administrative, and operating costs, we propose that each contribution will be provided up-front for the next phase of work to avoid incurring project losses or debt. Therefore, the first contribution will be at the start of the project, while the second and third contributions will be tied to achieving program outputs for Phases 1 and 2, respectively. Table 2.1 describes the timing of phases, core program costs, contribution amounts and the number of households served. Households-at-risk are less likely to also be the

property owner. So the number of households served will account for both the inhabitants and the property owners. Program phases:

- **Prototype Program Setup** - This phase includes partnership and governance development; detailed service and technical design; service procurement; client consultation; establishment of risk management and quality control systems and the evaluation framework; as well as a comprehensive Privacy Impact Assessment (PIA) on the detailed program design and an overarching privacy policy.
- **Prototype Program Testing & Refinement** - This phase involves a gradual ramping up of client intake; continuing design and implementation of services and technologies; and monitoring and evaluation of results. Program outcomes become measurable by the end of this phase.
- **Final Program Activation** - This phase requires the finalization of program service design and technical components; extensive documentation of program outcomes; and the development of learning materials for other communities and senior governments. The completion of the Final Program Activation phase marks the end of Smart Cities Challenge contribution agreement.

PERFORMANCE MEASUREMENT

Program Phases, Core Costs, Contribution Conditions, and Households Served by Fiscal Year

Fiscal Year	2020-21 Year 1	2021-22 Year 2	2022-23 Year 3	2023-24 Year 4	2024-25 Year 5	2025-30 (5 years) Long-term
Phase	1: Prototype Program Setup					
		2: Prototype Program Testing & Refinement				
					3: Final Program Activation	
						4: Program Maturity
Core Program Costs Plus Contingency	\$1.4 million	\$1.25 million	\$0.75 million	\$0.8 million	\$0.8 million	
Contribution Request	\$2.65 million at start of year		\$1.55 million at start of year		\$0.8 million at start of year	
Proposed Contribution Conditions	None		Phase 1 outputs achieved		Phase 2 outputs achieved	
Households Served	0	50	75	100	125	750 over 5 years
Relationship to Smart Cities Challenge (SCC)	Within SCC Program & Funding					After SCC

Table 2.1

Coordinated Access Service Provision Activities and Outputs

Activity	Year						Outputs
	1	2	3	4	5	long term	
Detailed program design							• program design complete
Staff hiring & training							• staff hired & trained
Database setup							• data platform created
Program established and serving clients		50 clients	75 clients	100 clients	175 clients	750 clients	• Clients (households and/or property owners) served by program
IT system maintenance							• data and IT systems maintained (ongoing)

Table 2.2

- **Program Maturity** - This phase includes ongoing client intake; program evaluation and improvement as well as the integration of new and emerging community energy technologies and solutions.

PROGRAM ACTIVITIES AND OUTPUTS COORDINATED ACCESS SYSTEM PROGRAM

ACTIVITIES AND OUTPUTS

This program pulls together the partner organizations and service providers required to design and deliver a successful Coordinated Access System. It also maintains relationships and information sharing between the partners. As a service that will be contracted out to a qualified third-party organization, the Town of Bridgewater will work collaboratively with its community partners to develop the scope of the service, and to establish quality control parameters and performance metrics. In doing so, we will work closely with experts and expert organizations in this field, including provincial and national agencies with interests and expertise in coordinated access services.

- **Partnership development:** partner agencies will be brought together and will sign a memorandum of understanding for engaging in the Coordinated Access System.

Partners will be consulted through a series of workshops on the service model, process work flow, and governance structure. Existing community collaborations to leverage include the Lunenburg County Community Hub which already brings together a wide spectrum of government and non-profit service providers in a coordinated continuum of practice to support early intervention and health promotion efforts as well as to coordinate case care.

- Program evaluation & improvement:** partners participate in ongoing program evaluation and improvement, with key service delivery partners actively participating in the evaluation process (see Overall Program Management later in this section). Evaluation will lead to periodic adjustments to the processes, policies and procedures of the service. Evaluation processes will be led and supported by staff and will involve client feedback on a regular basis.

Third party service providers will participate in an open procurement process for the provision of this service. Starting with a request for expressions of interest and culminating in a long-term service agreement, the Town of Bridgewater and its partners will assess service providers' expertise, capacity, and ability to deliver quality services that match the desired program scope. Service

provision for this program may be paired with, and enhanced through, provision of Coordinated Access Services to a larger clientele than is envisioned through the Energy Poverty Reduction Program (e.g. for clients outside of Bridgewater). However, sufficient capacity and funding will need to be evident to ensure that program quality is maintained. Client services begin in 2021-22, and increase annually for each of the 3 remaining program years until the program reaches its mature state. The program partners will work closely with the service delivery organization to ensure that program quality is maintained; that information sharing and privacy obligations are met; and the program outcomes are being achieved.

- Detailed program design:** building on the scope of work for the procured services, the service delivery partner will undertake the comprehensive design of the Coordinated Access Service. Specialized partners may be engaged in this stage, such as the Family Service of Western Nova Scotia or the Affordable Housing Association of Nova Scotia, both of which are currently active in developing coordinated access systems for their constituencies.
- Staff hiring & training:** qualified staff, known in this program design terminology as the "Household Navigator(s)", will be hired and trained by the service delivery organization to support program design and to deliver

the coordinated access service. Staff will be Clinical Social Workers who are licensed to practice in Nova Scotia. The service delivery partner will start by hiring 1.5 FTEs, which it will be able to expand to 2 FTEs by year 4. Staff will receive training in the specific clinical and administrative functions that will be required by the Energy Poverty Reduction Program, and they will be trained to use the program's data platform.

- Database setup:** the Homeless Individuals and Families Information System (HIFIS) is readily customizable by service providers, and will be set up with the appropriate data entry forms and reporting forms required for the Coordinated Access System. As a free service with plenty of user support, this effort will be primarily carried out in-house by the Household Navigator(s), with an allowance for technical support and equipment (e.g. tablet computers for mobility).
- Serve clients (2021 through 2030):** client service provision involves intake by the Household Navigator(s) from multiple referral points in the community, assessment and triage using a standardized intake tool (VI-SPDAT or similar), and referral to any and all community services the household may require. The Household Navigator maintains contact with

each client, providing the level of supportive service the household requires. The Navigator maintains client information in the HIFIS database, and only shares limited information, with the client's permission, with the rest of the Energy Poverty Reduction Program.

- **IT system maintenance:** there will be ongoing maintenance of the HIFIS system database, data entry and reporting forms, and maintenance of equipment.
- **Communications & marketing:** the program partners will design and implement a Communications Strategy for the Coordinated Access System which will include the following: (1) creating a clear understanding among all partners facilitating coordination of how the Coordinated Access System will function and how to engage residents on the system; (2) roll-out and maintenance of the Communications Strategy to inform underserved populations of the system; (3) ongoing communications with partners and funders to communicate the outcomes and evaluation of the service.



HOUSING ENERGY MANAGEMENT SYSTEM PROGRAM ACTIVITIES AND OUTPUTS

Extensive analysis of

Bridgewater's housing stock started with the Community Energy Investment Plan from 2016 to 2018. The analysis resulted in the classification of the housing stock into 32 "archetypes" based on the type, size, and age of the homes. A fully-costed retrofit program was conceptually modelled for the entire residential sector, using ambitious energy targets: greater than 50% thermal and electrical energy efficiency gains, plus the widespread addition of on-site renewables and battery storage. New construction targets were set at Net Zero Ready (NZR) or Net Zero (NZ), which the Government of Canada has established as long-term targets for the national Building Code.

The housing stock model was refined for the Energy Poverty Reduction Program. It adjusted the energy performance targets for retrofits to 60% efficiency improvement coupled with an additional 30% on-site or neighbourhood renewable energy generation. It also updated the capital costs for retrofits which were sourced from recent case data from local and provincial energy retrofit programs including the Clean Net Zero and Affordable Multi Unit Pilot programs. Connected technology solutions for both retrofits and new construction were added, and a redistribution of the housing archetypes based on extensive community surveying to identify the housing stock most affected by energy poverty was undertaken. All client properties will have access to the following energy management improvements, as long as they

meet technical and financial feasibility criteria:

- On-site or neighbourhood renewable energy generation (solar hot water + solar PV)
- Highly efficient mechanical systems (targeting air source heat pumps)
- High levels of ceiling, basement and wall insulation, as well as a high degree of air sealing
- Energy efficient and smart appliances
- LED lighting
- Energy monitors, smart thermostats, and other connected technologies
- Energy management education and training

The housing infrastructure improvements function as the technical backbone of Energy Poverty Reduction Program. Energy efficiencies gained by the infrastructure improvements will be measured and monitored via the connected technology solutions discussed in detail in the **Technology chapter**. Energy and climate benefits calculated through our custom housing stock improvement model estimate 4.8 GWh of energy and 2.5 kilotonnes of greenhouse gas emissions (GHG) reduced by 2024-25, with an additional reduction of 10.1 GWh of energy and 5.9 kilotonnes of GHG emissions reduced by 2029-30 (cumulative).

- **Partnership development:** partnerships will be established with key players in the energy and housing landscape, including Efficiency Nova Scotia, Nova Scotia Power, the South Shore Housing Action Coalition, and a number

Housing Energy Management System: Activities and Outputs

Activity	Year						Outputs
	1	2	3	4	5	long term	
Staff hiring & training							• staff hired & trained
Technical navigation services for clients							• technical navigation & support services provided
Detailed program design							• program design complete
Database setup - municipal enterprise resource planning (ERP) system							• data platform created
Database setup: energy management information system (EMIS)							• data platform created
IT system maintenance							• data and IT systems maintained (ongoing)
Plan & implement retrofits and new construction		45/5	68/7	91/9	114/11	682/68	• units retrofitted/units constructed
Service & supplier procurement & coordination							• services & suppliers procured in cohorts (phase 2 onward) • performance management or procured services & suppliers (phase 2 onward) • dialogue and capacity building with related industries (phase 2 onward)
Community engagement							• clients consulted on design (phase 1) • clients consulted on prototype test (phase 2) • ongoing consultation with clients (ongoing)
Program administration							• program administration services delivered (ongoing)
Program evaluation & improvement							• program outputs and outcomes evaluated, and program improvements made (ongoing)

Table 2.3

of government agencies. Key among partner activities is the sharing of information related to energy solutions and costs. Partners may participate in the program Steering Committee, support the development, implementation, and evaluation of the program, and may provide services under contract to the program or the program's clients.

- **Staff hiring & training:** staffing for the program will consist of the following:
 - o 1.5 FTE positions for the "Technical Navigator(s)" who will be technical staff with training and experience in building science and energy efficiency and at least one of whom will be a professional Engineer licensed to practice in Nova Scotia. Staff will receive training in the program's administrative and technical systems, and ongoing professional development related to community-based energy management services and large scale community energy systems.
 - o 1 FTE position for an Information Systems Specialist who will support the design and management of the program data platforms including the Energy Management Information System (EMIS). Staff will receive training in related data management systems: TownSuite, EMIS, and Real Time Operations systems.

- **Technical navigation services for clients:** services will be provided by the Technical Navigators to participating property owners. Services will begin with client intake and property registration, and depending on the property owner's needs, can involve a comprehensive suite of services including planning and assessment; monitoring and targeting; measurement and verification; performance verification; performance contracting; troubleshooting/fault detection; risk monitoring and control; contractor coordination (turn-key services); auditing; financial planning; and energy management education services. Services will cater both to retrofits as well as to new construction.
- **Detailed program design:** led by program staff and guided by the program partners, a detailed program design will incorporate best practices in community-scale energy efficiency programming, with an eye to achieving deep energy retrofits and highly efficient new construction. Informed by leading programs in the region, from across Canada, and internationally, attention will be focused on ensuring program accessibility for clients, mitigating problems commonly faced by landlords, and on making use of emerging connected technologies such as smart submeters and smart thermostats to achieve desired energy efficiencies and related household energy savings.
- **Database setup - municipal enterprise resource planning (ERP) system:** we will work with our municipal data platform provider, TownSuite, to set up the Enterprise Resource Planning (ERP) system backbone to support the program. The ERP is described in detail in the **Technology chapter**.
- **Database setup - energy management information system (EMIS):** complementing the development of the ERP is the development of the EMIS module of the data platform. The module will interface with the ERP and provide the core energy monitoring and planning functionality of the program. Due to its complexity, the development of the core functionality of the EMIS will fully span Phases 1 and 2. The EMIS and its associated advanced functions (including real time operations systems) is described in detail in the **Technology chapter**. Technical risk involved with designing and deploying the EMIS system has been identified as a significant program risk, justifying the need for this time and effort. This is discussed in the Risk Management Section of the Project **Management chapter**.
- **IT system maintenance:** ongoing maintenance and licensing fees associated with the data platforms described above, and maintenance of equipment.
- **Service & supplier procurement & coordination:** the Technical Navigators will issue periodic calls for contractors and suppliers, collectively known as Energy Service Providers. Management of those procurements and contracts will require ongoing effort. Supply chain risk involved with procuring these services has been identified as a significant program risk, justifying the need for this time and effort.
- **Community engagement:** the Technical Navigators will be involved in engagement and consultation efforts with program clients (households-at-risk as well as property owners) both to inform program design and prototyping as well as for ongoing program evaluation.
- **Program administration:** administration of the program will involve ongoing program management, monitoring, reporting and human resource development.
- **Program evaluation & improvement:** partners participate in ongoing program evaluation and improvement, with



key service delivery partners actively participating in the evaluation process (see Overall Program Management later in this section). Evaluation will lead to periodic adjustments to the processes, policies and procedures of the service. Evaluation processes will be led and supported by staff, and will involve client feedback on a regular basis.

- **Communications & marketing:**

we will design and implement a Communications Strategy for the Housing Energy Management System which will include the following: (1) developing a marketing strategy to engage property owners and households-at-risk in the program, which will likely involve branding the program without the use of the term “energy poverty”; (2) roll-out and maintenance of the Communications Strategy to inform all clients of the service; (3) ongoing communications with partners and funders to communicate the outcomes and evaluation of the service.

RETROFITS AND NEW CONSTRUCTION

The Town of Bridgewater will engage partners to create a common vision informed by the community for the development of affordable, green, and accessible housing in Bridgewater. The Town will conduct a housing needs assessment to identify demographics, gaps in

housing provision and existing housing stock. The Town will undertake steps to incorporate policies into Town plans to ensure affordable and energy efficient homes are a council priority. Regulatory structures and incentives will be put in place in accordance with recommended actions outlined in Bridgewater’s Community Energy Investment Plan (2018). The Technical, Investment, and Household Navigators will provide service coordination for homeowners and those in housing need to access programs available through the Housing Energy Management System, Financial Investment Vehicle, and Coordinated Access System.

The Town will take several actions to incorporate policies, create regulatory incentive frameworks, and enable financing opportunities to ensure that retrofit and new construction meets the energy efficiency and affordability targets of our application. First, the Town’s Municipal Planning Strategy (2014) will be amended to include policies for housing energy efficiency targets laid out in the Town’s Community Energy Investment Plan (2018). This may include creating a specific energy efficiency overlay zone to incent retrofits, upgrades and building to higher standards than the current building code requires. Further policies will be added in support of mixed tenure, affordable housing congruent with existing policies for supporting the construction of a range of higher density,

mixed-use infill development in the Town’s core. The Town’s criteria for evaluating proposals for land use by-law amendments and development agreements will be amended to ensure that staff and Council shall consider the energy efficiency and affordability of housing when making decisions.

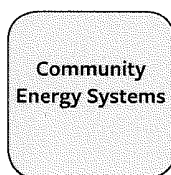
As per the Town’s Community Energy Investment Plan (2018) additional policies outside of the land use planning documents will be pursued. These include:

- Maintain and expand annual financing limits for Property Assessed Clean Energy Financing to incentivize property owners to build to a higher energy efficient standard, and explore opportunities to expand program eligibility to include multi-unit residential, commercial, and institutional buildings.
- Establish incentives to support and encourage highly energy efficient building practices for residential development.

In Nova Scotia, the responsibility for affordable housing lies with the provincial government through Housing Nova Scotia. Municipalities do not have a legislated requirement, but a societal expectation to provide for the needs of their residents and community. Bridgewater Town Council identified the need to play a stronger role in providing affordable housing well

before the development of the Energy Poverty Reduction Program. But it did not have the broad community support for or deep understanding of the relationship between housing infrastructure, energy management and overall poverty to go beyond general policies of smart growth, residential infill and densification. Catalyzed by this deeper understanding of energy poverty, Council may develop policies to actively attract and support the development of affordable, energy efficient housing. This may include policies to facilitate the sale of town-owned land to a non-profit housing body for less than market value; and, to limit municipal taxes and/or fees for properties owned by a company or corporation established for the purposes of non-profit housing services.

The housing retrofit program will serve all major housing types in the community, including single detached, semi-detached, mobile home, and multi-unit resident buildings (MURBS). The Town's Community Development staff and the Technical Navigators will play a critical role in communicating these opportunities to property owners early in the development phase.



COMMUNITY ENERGY SYSTEMS PROGRAM ACTIVITIES AND OUTPUTS
The development of utility grade services, either directly

by the Town of Bridgewater, or procured through a third-party provider, has been selected as the most practical and economical pathway toward neighbourhood and community scale energy system development in Bridgewater. The activities described in Table 2.4 will be initiated by our technical project team (Project Coordinator, Technical Navigators, and Investment Navigator), with the support of externally-procured consultation and engineering services.

- **Technical resource assessment:** expanding on the preliminary work completed through the Community Energy Investment Plan, a detailed technical review of energy consumption and various energy generation sources (solar, wind, hydro etc.) will be assessed. This process will involve independent analysis of various renewable resources, and the cost to produce energy. Paramount to this step will be assessing fit between consumption patterns and renewable generation technologies, as poorly matched generation and consumption patterns can lead to technical and financial inefficiencies, and increase the requirement of energy storage.
- **Municipal utility detailed service design:** the first step of investigating and establishing a Municipal Utility Grade Service will be to establish the scope

and design frame of this approach. In general, utility grade service can involve the generation, distribution and sales of electricity, data collection and assessment, and integration of connected technology such as demand control, sensors and energy storage. This first step will involve both a technical and a legal/regulatory review to define scope, best practices and to specific regulations and applications required.

- **Municipal utility setup and/or service procurement:** the most important part of this scope will be facilitating agreement with the incumbent utility, Nova Scotia Power. While the scope of utility service provision can vary significantly, there will always have to be a significant interaction with NS Power at the point of interface. This discussion would include such items as transmission and distribution system access, top up and spill provisions, emergency response, grid ancillary services and administration. The commercial terms of this agreement will have a major impact on the financial variability of power generation and sales in the community. An additional aspect to this set up process is determining the entity that performs this service. Three options exist: (1) expand existing municipal utility, (2) new stand-alone new municipal utility, and (3) a public-private partnership (P3)

arrangement for service provision to a municipal utility.

- **Legislative and regulatory approval process:** while the regulatory process is defined, agreements will have to be in place with NS Power in order to proceed with any certainty through the application process. Of the three types of service noted above, only the generation and distribution of electricity is currently contemplated by the *Public Utilities Act*. Value added services through data and control of connected technologies such as demand control and energy storage would not require the regulatory process of establishing a municipal utility.
- **Database setup:** as detailed in the **Technology chapter**, the Energy Management Information System will be set up in such a way as to ensure future compatibility with community energy systems. While detailed IT integration in this regard cannot be completed until the time the specific technology is installed, a number of important functional components need to be prepared in the EMIS to enable this integration down the road.
- **Utility grade service management:** once all of the above is complete, Bridgewater

Community Energy Systems: Utility Grade Service Provision Activities and Outputs

Activity	Year						Outputs
	1	2	3	4	5	long term	
Technical resource assessment							• community-wide energy generation feasibility study complete
Municipal utility detailed service design							• utility grade services designed
Municipal utility setup and/or service procurement							• municipal utility established
Legislative & regulatory approval process							• legislative & regulatory approvals achieved
Database setup							• data platform created
Utility grade service management							• municipal utility services delivered (ongoing)

Table 2.4

will be in a position to offer utility grade energy services. With careful attention to financial considerations as discussed in the **Financial chapter**, work can begin in capitalizing the utility and providing service.

SOLAR GARDEN DEVELOPMENT

The development of a community-owned “solar garden” has been selected as the preliminary technology for the neighbourhood-scale energy system for the Energy Poverty Reduction Program, as early assessments have suggested that such a system would lend itself well to delivering the outcomes proposed under this program. However, the final selection of the energy technology will be contingent on the outcome of the technical resource assessment

described on the previous page. We are anticipating approximately 6MW of Community Solar Garden to be built in the first 5 years of our program. This will start in year 3, and supply the remaining load from the Housing Retrofit homes as well as 75-200 additional customers per year from the community. Each annual addition of solar generation capacity would be financed, so that payments made by the customers would cover the loan on the project. More detail on this and ownership structures can be found in the **Financial chapter**.

Conceptual design: a detailed assessment of the size and scale of the solar community garden would first be conducted. It would grow annually as more retrofits are completed. This stage

would also consider if additional community participation to that of the neighbourhood retrofits could be considered. The end result of this stage should be a detailed financial proforma for each year's installation, along with the cumulative cashflows of the facility.

Fundraising & financing: this stage will span the project schedule from start to operation. Different types of financing will be available at different stages of project development. The various contracts with customers for the sale of power from the facility will be the key asset upon which the community entity can raise the equity and debt investment for the project. More information is available in the **Financial chapter**.

Community consultation: early and open transparency regarding project location, timelines, construction and environmental impact will be essential to this project's social acceptance. Open house style engagements have proven to work well with previous renewable energy projects in Nova Scotia of a similar scale (ie. COMFIT, SolarCity).

Detailed engineering design: once the concepts and project financing are established, detailed engineering design will take place. This will involve geotechnical, structural, and electrical design. There are many firms with local representation that have experience

in design projects of similar sizes, and public procurement of these services will take place.

Permitting: permitting requirements for the project will include municipal, electrical utility and any additional environmental permissions.

Procurement: procurement will take place in stages as solar garden components are funded over 3 consecutive years. The market for renewable energy equipment is well established in Canada and globally. Costs can vary over time due to market efficiencies and changes in tariffs. Delivery schedule is usually tied to the placement of a firm order and can range from three months to two years, though for a smaller solar project 1-2MW in size at a time it is expected be on the shorter end of that timeframe. Placing an order for equipment will also require deposits to be paid.

Construction: the solar garden would be ground mounted with power generated collected to common points and connected to the NS Power electrical system. Major scopes of work for construction would be: (1) supply of panels and related equipment, (2) civil/roads, (3) structural (foundations and racking), electrical installation, and commissioning/testing. It is common that many of these scopes be combined into a generation contractor agreement, or an Engineer, Procure, Construction (EPC) contract.

Community Energy Systems: Solar Garden Development Activities and Outputs

Activity	Year						Outputs
	1	2	3	4	5	long term	
Conceptual design							• conceptual design complete
Fundraising & financing							• financing & funding targets achieved
Community consultation							• community consultants complete
Detailed engineering design							• detailed engineering design complete
Procurement							• services & suppliers procured
Permitting							• permits achieved
Construction							• construction complete
Database & IT systems setup							• IT systems installed
Commissioning							• commissioned
Operation & maintenance							• maintained (ongoing)

Table 2.5

Database & IT systems setup: all modern community scale energy generation systems come with internet addressable controls systems. It will be important to ensure that data from this system can be integrated to the Town's EMIS. Generally, this interaction is undertaken with the solar technology provider.

Commissioning: the designer and installers of the solar garden will take on performance risk of the installation, to help make sure that the solar garden performs properly before the Town and the project investors accepts the installation in to operation.

Operation & maintenance: modern solar energy systems come with 25 year warranties on panels, and 10 years+ on other components such as racks and inverters. The community solar garden will contract for spare parts provisions and maintenance service provision, as well as for operational oversight.



MOBILITY IMPROVEMENT SYSTEM PROGRAM ACTIVITIES AND OUTPUTS

This service receives client mobility information from the Housing Energy Management System through the Technical Navigators, and from the Coordinated Access System through the Household Navigators, and uses it to plan and

implement transportation improvements in the community. Implementation of improvements must be approved by Town Council through annual budgeting processes, and if approved are implemented by the Bridgewater Transit system and Engineering Department. While the program is focused on transit and active transportation modes at this time, future integration with rideshare and paratransit services is a real possibility that would be further enhanced through the planning functionality provided by this program.

- **Detailed program design:** planning staff will work with community partners to finalize the program scope and develop its technical methodologies. This will take place over a two-year timeframe to ensure integration with the overall program data platform, and to involve the first year of program clients directly in the design process.
- **Partnership development:** partnerships will be established with key players in the transportation and accessibility landscape, including members of the Bridgewater Active Transportation Committee, a standing Committee of Council with strong ties to community service providers.
- **Database setup:** the municipal enterprise

resource planning components of the municipal data platform will be expanded to include a Client Mobility Application module. This will link with the existing Land Management GIS module to enable transportation planning through the use of spatial data from other parts of the system. Specifically, the civic addresses of program clients will be linked with transit and active transportation routing maps, and made to perform transportation planning calculations, including walking distance to the nearest bus stop and sidewalk or trail network. Mobility indicators are tracked by neighbourhood, with the goal of seeing improvement over time as enhancements are made.

- **IT system maintenance:** ongoing maintenance and licensing fees associated with the data platforms described above, and maintenance of equipment.
- **Community engagement:** staff will be involved in engagement and consultation efforts with program clients (households-at-risk as well as property owners) to inform program design and prototyping as well as for ongoing program evaluation.
- **Communications & marketing:** we will design and implement an

Mobility Improvement System: Program Coordination & Administration Activities and Outputs

Activity	Year						Outputs
	1	2	3	4	5	long term	
Detailed program design							• program design complete
Partnership development							• partnership established
Database setup							• data platform created
IT system maintenance							• data and IT systems maintained (ongoing)
Community engagement							• clients consulted on design (phase 1) • clients consulted on prototype test (phase 2) • ongoing consultation with clients (ongoing)
Program administration							• program administration services delivered (ongoing)
Program evaluation & improvement							• program outputs and outcomes evaluated, and program improvements made (ongoing)

Table 2.6

improved Communications Strategy for the community's transit and active transportation systems, which will include the following: (1) developing a marketing strategy to engage residents in the program, which will build on engagement recommendations from the renewed Active Transportation & Connectivity Plan; (2) roll-out and maintenance of the Communications Strategy; (3) ongoing communications with partners and funders to communicate the outcomes and evaluation of the service.

- **Program evaluation & improvement:** partners participate in ongoing program evaluation and improvement, with key service delivery partners actively

participating in the evaluation process (see Overall Program Management later in this section). Evaluation will lead to periodic adjustments to the processes, policies and procedures of the service.

TRANSIT SYSTEM IMPROVEMENTS

Bridgewater Transit has been operating successfully since 2017. As a new municipal service, improvements to transit routing and service delivery have been occurring on a regular basis. The transit service can benefit substantially from the enhanced planning functionality provided through this program.

Transit service improvement planning includes: making periodic routing adjustments,

improving transit service accessibility, quality improvement measures, improvements to communications and marketing systems, and the integration of connected technology functions to the bus service. Already, a GPS locator in the bus allows for real-time tracking of the bus for the public. Additional service and communication enhancements based on connected technologies may include the development of client notification, survey, and complaint functions, as well as opportunities to provide real-time transit information to service providers including agencies that support under-served residents. Transit improvements are subject to Council approval on an annual basis. Transit service improvements will be documented and evaluated on an ongoing basis.

ACTIVE TRANSPORTATION IMPROVEMENTS

Active transportation planning and evaluation efforts can benefit substantially from the enhanced planning functionality provided through this program. Active transportation improvements will build on the recommendations and solutions provided through Town's Active Transportation and Connectivity Plan, which was developed in 2008 and which will be comprehensively renewed in 2019.

The nature of AT infrastructure improvements will depend entirely on the neighbourhoods that

are selected for priority improvement. A budget has been proposed that represents approximately double the Town's current annual budget for these annual improvements. The budget allows for a combination of neighbourhood-based AT improvements, such as the installation of new sidewalks, replacement or upgrade of existing sidewalks, improved crosswalk paint and accessibility infrastructure, the addition of lighting in underlit areas, and making improvements to the Town's trail systems. AT improvements are subject to Council approval on an annual basis. Improvements will be documented and evaluated on an ongoing basis.



MUNICIPAL CAPITALIZATION SYSTEM

This system provides core financial budgeting and capitalization services to the other program services. It is responsible for "specialized finance" stacking, assembling project opportunities and outcomes, and reporting to funders. It interfaces closely with the Financial Investment Vehicle, which brings additional private investment into the program. This program is explained in detail in the **Financial chapter** of this proposal.

- **Detailed program design:** program design will be carried out primarily by the Investment Navigator with the support of the program

partners. Program design ensures that both the municipal capitalization system and the financial investment vehicle systems work cohesively and with fluidity. In order to do so, workflows and timelines need to be well-established. Focus groups and a gap analysis will determine the missing capacity to deliver on investment system outcomes, and controls designed to ensure operations do not derail.

- **Database setup:** the municipal database is to be defined and created in parallel with the detailed program design. The municipal enterprise resource planning platform will allow this financial budgeting and reporting functionality. Database requirements will be clearly articulated to the development team, and the developer and Town will correspond throughout the development process. The developer will receive a list of necessary components, and a testing team composed of various stakeholders, both internal and external to the Town, will be sourced to test its functionality.
- **Staff hiring and training:** staffing for this service will consist of 1 FTE position for the "Investment Navigator" who will have training and experience in financial management, analysis, and budget development, with preference given to someone with a

background in large scale project finance and investment and an interest in the clean tech-sector and project-aligned social values. Staff will receive training in the program's administrative and technical systems, and ongoing professional development related to community-based financial planning services.

- **Partnership Development:** partnerships will be developed with three key groups: funders, investment vehicle services, and community capacity building organizations. The Investment Navigator will approach federal, provincial, and philanthropic funders to ensure robust funding streams are explored. Investment vehicle service partners are needed to set up and deliver the external investment vehicle described below. Community capacity building partners include local credit unions that are willing to act as financial literacy support organizations for program clients. Partners may participate in the program Steering Committee, and will support the development, implementation, and evaluation of the program.
- **Project financial planning:** on an ongoing basis, staff will calculate funding requirements for projects defined and projected by the Energy Poverty Reduction Program, and pool together project components into capitalizable groupings that are attractive

to traditional, community, and specialized investors. This budgeting exercise will be facilitated by partnership opportunities established through partnership development activities and will rely on the database module developed for the program. Dynamic data sharing with the Financial Investment Vehicle is a key activity throughout the planning stage.

- **Plan, confirm and administer funding (2021 through 2030):** once specific projects are identified and pooled into groups, the Investment Navigator seeks specific funders to commit to those investment raises, until funding targets are met. Understanding that most funders operate on annual budgets, a recurring approach to raising specialized sources of capital will be undertaken. Annual administrating tasks include updating the database and reconciling accounts.
- **Reporting to funders:** reporting will be automated to the greatest extent possible to allow for real-time monitoring of project outcomes specifically pertaining to funding obligations. It is expected that each source will require different reporting criteria and on different schedules. These activities will be administered by the Investment Navigator.

Investment System: Municipal Capitalization System Activities and Outputs

Activity	Year						Outputs
	1	2	3	4	5	long term	
Detailed program design							• program design complete
Database setup							• data platform created
Staff hiring & training							• staff hired & trained
Partnership development							• partnership established
Project financial planning							• project financial planning completed (ongoing)
Plan, confirm, and administer funding 2021-30		\$1.71	\$2.28	\$3.03	\$3.83	\$25.82	• millions raised in project funding from specialized investors
Reporting to funders							• project reporting needs satisfied (ongoing)
IT system maintenance							• data and IT systems maintained (ongoing)
Program evaluation & improvement							• program outputs and outcomes evaluated, and program improvements made (ongoing)

Table 2.7

- **IT system maintenance:** ongoing maintenance and licensing fees associated with the data platforms and maintenance of equipment.
- **Program evaluation and improvement:** partners participate in ongoing program evaluation and improvement, with key service delivery partners actively participating in the evaluation process (see Overall Program Management later in this section). Evaluation will lead to periodic adjustments to the processes, policies and procedures of the

service. For example, it is expected that new technologies, financing mechanisms, and funding sources will evolve throughout the 10-year program and arrangements that were once not well suited may become more feasible over time. Evaluation processes will be led and supported by the Investment Navigator, and will involve client feedback on a regular basis.

FINANCIAL INVESTMENT VEHICLE

This program complements the Municipal Capitalization System but is external to the Town of Bridgewater, with services procured through

an existing or new organization. The program is responsible for traditional financing (inclusive of community investments), cash disbursements through outcome-data shared by the municipal capitalization system, investing in energy poverty reduction program assets, and reporting to investors. This program is explained in detail in the **Financial chapter** of this proposal.

- **Investment vehicle organization creation and/or service procurement:** an organization that provides the best value to the Town and the Energy Poverty Reduction Program is procured. Target services include: the ability to set up community-based investment vehicles and organizational structures (see **Financial chapter** for details) the capacity to source traditional and community financing, adherence to appropriate best practices, and utilization of a comprehensive data-security and privacy plan. A unique organizational structure must be incorporated, appropriate bylaws must be drafted, and a governance structure that aligns with the Town's needs must be set up. Once sourced or built, an agreement with the Town must be drafted and executed. To support this service procurement process, financial investment vehicle and investor-related service delivery partnerships will be explored early in the

Investment System: Financial Investment Vehicle Activities and Outputs

Activity	Year						Outputs
	1	2	3	4	5	long term	
Investment vehicle organization creation and/or service procurement							• investment vehicle organization created
Administration & Reporting							• administration & reporting services delivered (ongoing)
Plan, sell, and administer investment raise 2021-30		\$0.74	\$7.69	\$9.0	\$8.86	\$10.78	• millions raised in project financing from financial investors

Table 2.8

partnership development process. For the purpose of this application the MaRS Centre for Impact Investing, whose SVX platform connects investment opportunities with impact investors, is being considered as a useful template for this service.

- **Administration and reporting:** Reporting should be automated to the greatest extent possible and allow for real-time monitoring of project outcomes specifically pertaining to what the funding source needs to access. It is expected that each traditional source will require different reporting criteria and varying schedules. These activities and the deployment of funds will be administered by the organization with data shared between the Municipal Capitalization System and the Financial Investment Vehicle.
- **Plan, sell, and administer investment raises (2021 through 2030):** activities are

dependent on the two financing streams: traditional and community. Both require separate offering terms, due diligence activities and marketing narratives. The organization will be responsible for sourcing traditional debt investments paired with equity raises. These raises will be enhanced through third-party data and connected technology applications. Raising funds involves the development of a marketing strategy, inclusive of buying cycle projections, an elevator pitch and lead nurturing strategies. Investor onboarding activities continue throughout the "raise" and "manage" cycle and include subscription processing, and investor and financial institution correspondence. Monitoring investor satisfaction is a key component to ensuring investment raises are sustainable year-to-year. Additional information is provided in the **Financial chapter**.

EVALUATION MODEL

In the Energy Poverty Reduction Program, there are multiple stakeholders and partners, a need to make quick decisions, prototyping of new programs, and high levels of uncertainty. Developmental evaluation is appropriate for this type of work because

the governance and management team are ready and willing to test new approaches and make changes along the way to reach the goal of energy poverty reduction. Using these evaluation methods will allow the opportunity to blend qualitative and quantitative reporting.

As the evaluation process will be in tune with the evolving program dynamics, achievements, and struggles, it also plays an important role in the design and implementation of the program's risk management strategy and associated course correction checkpoints, which are described in the **Project Management** chapter.

Overall Program Management: Evaluation Framework

Phase	1: Prototype Program Setup	2: Prototype Program Testing & Refinement	3: Final Program Activation	4: Program Maturity
Ongoing Project Evaluation Priorities		<ul style="list-style-type: none"> Continuous reflection of role clarification Partner relations Guiding principles Project structure 	<ul style="list-style-type: none"> Quality of learning cultures Existing and new project teams Responsiveness Moments of innovation 	
Phase-Specific Evaluation Priorities	Design by Core Team <ul style="list-style-type: none"> Partners – clarification of roles Identify and build relationships with individual champions Identify expertise of identified partners Identify guiding principles and clarity of project charter Leverage historical experiences Establishment of project structure Encouraging and identifying innovations in project design 	Early Changes <ul style="list-style-type: none"> Highlight new and emerging leadership Consider internal and external creative tensions Revisit guiding principles Review lessons learned Review and adapt project structure Document innovations from prototyping Consider emerging risk Scaling project Anticipate blocks to progress 	Systems Changes <ul style="list-style-type: none"> Revisit guiding principles Review and adapt project structure Leverage learned innovations Establishment of ongoing project charter The establishment of ongoing structure 	Population Changes <ul style="list-style-type: none"> New partners: funding, human resources, skills, leadership. Operationalize the innovations
Desired Outcomes	<ul style="list-style-type: none"> Project charter providing useful guidance Core team/participants report feeling engaged in project Systems to direct the project are established and useful 	<ul style="list-style-type: none"> New collaborations consistent with Guiding Principles are established New funding and financing opportunities are identified The practical usefulness of data collection systems are improved 	<ul style="list-style-type: none"> New resident and partner-informed programs and process are developed New volunteer and agency leadership is engaged Local collaborations to sustain impact post project are established 	<ul style="list-style-type: none"> Reducing Energy Poverty is considered a local 'movement' rather than a project Residents pulled out of energy poverty are championing the impact Local agencies, institutions and organizations are supporting counterparts in other jurisdictions to make changes to decrease EP.
Evaluation Outputs for Infrastructure Canada	<ul style="list-style-type: none"> Phase 1 output report. Key output target: program governance, management, and evaluation systems in place 	<ul style="list-style-type: none"> Phase 2 output report Phase 2 preliminary outcomes report 	<ul style="list-style-type: none"> Phase 3 output report. Key output target: Phase 3 program outputs and outcomes evaluated Phase 3 final outcomes report 	<ul style="list-style-type: none"> Phase 4 output and outcomes reporting not applicable to Infrastructure Canada under this funding agreement

Table 2.9

Energy Poverty Reduction Program Outcomes Logic Model

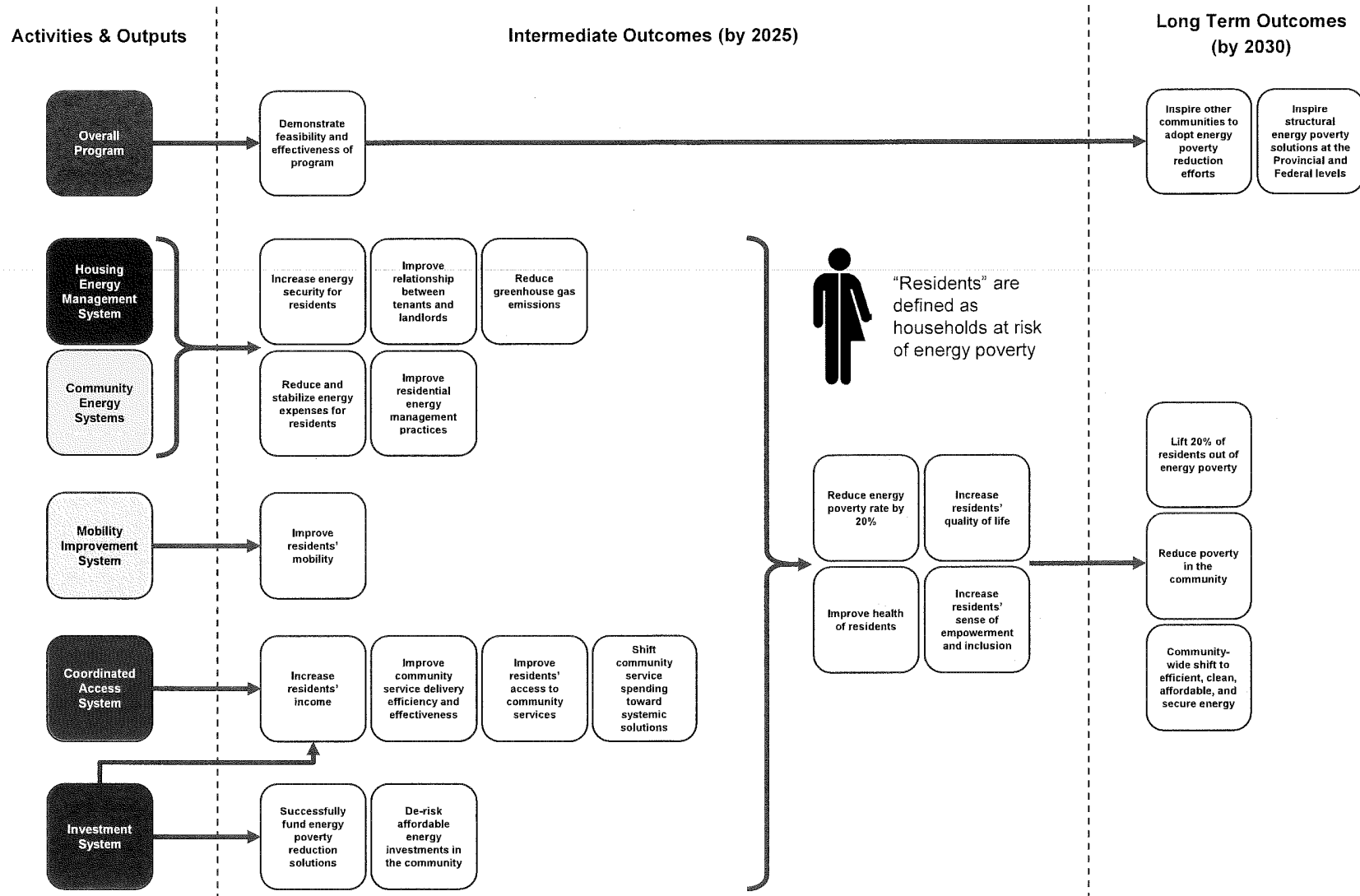


Diagram 2.1

PROGRAM OUTCOMES AND INDICATORS

The program activities and outputs described in the preceding section are expected to result in a set of 22 intermediate and long-term outcomes that benefit the program clients, program stakeholders, the community as a whole, the environment, and ultimately communities

beyond Bridgewater. Diagram 2.1 summarizes the Energy Poverty Reduction Program outcomes logic model. Outcomes displayed in the “intermediate outcome” section of the Diagram 2.1 will be demonstrated by 2025. While the benefits of these outcomes will continue to accrue past the Smart Cities Challenge program an additional set of 5 long-term outcomes are displayed in the final

section of the chart, indicating our community’s continued benefits from the program.

Indicators chosen for each outcome are meaningful, measurable and monitorable via data collected through the program itself, through regular community-wide surveys or from Statistics Canada census information.

Program Outcome Indicators and Associated Measurement Methodologies, Sources, and Tracking Systems

Outcome Category	Outcome	Performance Indicator	Baseline		Target		Methodology	Source	Tracking Program/ System
			Year	Value	Year	Year			
Reduced poverty & improved wellbeing	1. Reduce energy poverty rate	Percent of households living in energy poverty	2018-19	38.5% (1,613 of 4,194)	2024-25	30.6% (1,362 of 4,452) = 20% rate reduction	Percent of households who self-report spending more than 10% of after-tax income on energy for the home and transportation and currently experiencing energy poverty. Measured through bi-annual community-wide survey. Percentages are based on projected future household growth as calculated in the Community Energy Investment Plan, with a basis in the 2016 Census.	Bi-annual community-wide Housing, Energy, and Transportation survey, to be conducted in 2028-29. Data stored on municipal platforms.	Overall Program
					2029-30	14.4% (660 of 4,577) = 62% rate reduction			Overall Program
	2. Reduce poverty	Percent of households living in core housing need	2016-17	27.9% (1,135 of 4,075)	2026-27	Decrease from baseline	Percent of households living in core housing need. A household is said to be in ‘core housing need’ if its housing falls below at least one of the adequacy, affordability or suitability standards and it would have to spend 30% or more of its total before-tax income to pay the median rent of alternative local housing that is acceptable (meets all three housing standards).	Census data (Statistics Canada). Target year will use 2026 Census.	Overall Program
	3. Improve health of residents	Amount of time program clients are able to meet their thermal comfort needs at home	Property intake year	Average property intake value	2024-25	Increase from baseline	Number of days per year that homes inhabited by program clients are sufficiently heated or cooled to a minimum level necessary for physical wellbeing. Subtracts the number of days that the temperature in main living area drops below 16 degrees C (threshold for respiratory illness) and 12 degrees C (threshold for cardiovascular illness), or above 27 degrees C (threshold for heat related illness) for a sustained period while occupants are home. Performance measured through change from baseline, pooled by property cohort (intake year).	Home energy monitoring system reports aggregated home temperature data. Data stored on municipal platforms.	Housing Energy Management System

Table 2.10

CONTINUED

PERFORMANCE MEASUREMENT

Outcome Category	Outcome	Performance Indicator	Baseline		Target		Methodology	Source	Tracking Program/ System
			Year	Value	Year	Year			
Reduced poverty & improved wellbeing	3. Improve health of residents	Thermal comfort of program clients	Client intake year	Average client intake score	2024-25	Increase from baseline	Overall thermal satisfaction over the past year, based on a scale from 1 (very dissatisfied) to 10 (very satisfied). Self-reported assessment by client households. Performance measured through change from baseline, pooled by client cohort (intake year).	Client wellbeing survey facilitated by Household Navigator. Initial intake, followed by periodic updates. Data stored on HIFIS.	Coordinated Access System
		Energy poverty-correlated population health index	2020-21	To be determined	2024-25	Improvement from baseline	Customized index of population health indicators to be designed and monitored by the Nova Scotia Health Authority using deidentified health system data. See letter of support.	Information to be collected and analysed by Nova Scotia Health Authority.	Coordinated Access System
	4. Increase residents' quality of life	Satisfaction of life in general for program clients	Client intake year	Average client intake score	2024-25	Increase from baseline	Satisfaction of life in general on a scale from 1 (very dissatisfied) to 10 (very satisfied). Self-reported assessment by client households. Performance measured through change from baseline, pooled by client cohort (intake year).	Client wellbeing survey facilitated by Household Navigator. Initial intake, followed by periodic updates. Data stored on HIFIS.	Coordinated Access System
	5. Increase residents' sense of empowerment and inclusion	Frequency of social contact for program clients	Client intake year	Average client intake score	2024-25	Increase from baseline	Percentage of time in the past year that the client reports contact 'once a week or more' with relatives and/or friends. Self-reported assessment by client households. Performance measured through change from baseline, pooled by client cohort (intake year).	Client wellbeing survey facilitated by Household Navigator. Initial intake, followed by periodic updates. Data stored on HIFIS.	Coordinated Access System
		Sense of belonging for program clients	Client intake year	Average client intake score	2024-25	Increase from baseline	Sense of belonging to the local community on a scale from 1 (very weak) to 10 (very strong). Self-reported assessment by client households. Performance measured through change from baseline, pooled by client cohort (intake year).	Client wellbeing survey facilitated by Household Navigator. Initial intake, followed by periodic updates. Data stored on HIFIS.	Coordinated Access System
	6. Increase energy security for residents	Amount of time program clients are able to meet their home energy needs	Property intake year	Average property intake value	2024-25	Increase from baseline	Number of days per year that homes inhabited by program clients are sufficiently powered, heated, or cooled to a minimum level necessary for physical and mental wellbeing. Performance measured through change from baseline, pooled by property cohort (intake year).	Home energy monitoring system issues alert on days that the home is unpowered or minimal thermal comfort levels are not met. Data stored on municipal platforms.	Housing Energy Management System

Table 2.10

CONTINUED



PERFORMANCE MEASUREMENT

Outcome Category	Outcome	Performance Indicator	Baseline		Target		Methodology	Source	Tracking Program / System
			Year	Value	Year	Year			
Better Housing	7. Reduce and stabilize energy expenses for residents	Spending on shelter by program clients	Client intake year	Average client intake value	2024-25	Decrease from baseline	Total annual spending on shelter by program clients (as applicable: rent, mortgage, insurance, property tax, maintenance, utilities, and energy contracts). Self-reported assessment from client households. Performance measured through change from baseline, pooled by client cohort (intake year).	Client wellbeing survey facilitated by Household Navigator. Initial intake, followed by periodic updates. Data stored on HIFIS.	Coordinated Access System
		Affordability of housing energy costs	2018-19	37.4%	2024-25	Decrease from baseline	Percent of households who self-report having difficulty affording their home energy costs. Measured through bi-annual community-wide survey. Percentages are based on projected future household growth as calculated in the Community Energy Investment Plan, with a basis in the 2016 Census.	Bi-annual community-wide Housing, Energy, and Transportation Survey, to be conducted in 2024-25. Data stored on municipal platforms.	Overall Program
	8. Improve relationship between tenants and landlords	Cost of home energy for participating properties	Property intake year	Average property intake value	2024-25	Decrease from baseline	Annual cost of all energy types consumed by homes inhabited by program clients, adjusted for annual climatic variability (heating degree days). Performance measured through change from baseline, pooled by property cohort (intake year).	Home energy monitoring system reports aggregated home energy consumption and cost data. Data stored on municipal platforms.	Housing Energy Management System
		Level of trust between tenants and landlords - tenant perspective	Client intake year	Average client intake value	2024-25	Increase from baseline	Perception of trust in the landlord based on a scaled rating system on a scale from 1 (very low level of trust) to 10 (very high level of trust). Self-reported assessment from client households. Performance measured through change from baseline, pooled by client cohort (intake year).	Client wellbeing survey facilitated by Household Navigator. Initial intake, followed by periodic updates. Data stored on HIFIS.	Coordinated Access System
	9. Improve residential energy management practices	Level of trust between tenants and landlords - landlord perspective	Property intake year	Average property intake value	2024-25	Increase from baseline	Perception of trust in the tenant(s) based on a scaled rating system on a scale from 1 (very low level of trust) to 10 (very high level of trust). Self-reported assessment from client property owners or their property managers. Performance measured through change from baseline, pooled by property cohort (intake year).	Property owner survey facilitated by Technical Navigator. Initial intake, followed by periodic updates. Data stored on municipal platforms.	Housing Energy Management System
		Cost savings resulting from energy management practices for participating properties	Property intake year	Average property intake value	2024-25	Increase from baseline	Total annual cost savings as compared to baseline energy consumption resulting directly from energy management practices (manual + automated) as calculated by home energy monitoring & control system. Accompanied by a property owner & tenant survey on energy conservation practices that is used to illustrate/educate opportunities for improved energy management. Performance measured through change from baseline, pooled by property cohort (intake year).	Home energy monitoring system reports aggregated home energy savings data. Property owner survey & tenant facilitated by Technical Navigator. Initial intake, followed by periodic updates. Data stored on municipal platforms.	Housing Energy Management System

Table 2.10

CONTINUED



PERFORMANCE MEASUREMENT

Outcome Category	Outcome	Performance Indicator	Baseline		Target		Methodology	Source	Tracking Program / System
			Year	Value	Year	Year			
Increased Mobility	10. Improve residents' mobility	Community-wide transit ridership	2018-19	27,000 annual riders	2024-25	43,000 annual riders	Daily average transit ridership. Includes all passenger types.	Ridership counted hourly by bus drivers. Data stored on municipal platforms.	Mobility Improvement System (MIS)
		Mobility self-assessment rating by program clients	Client intake year	Average client intake value		Increase from baseline	Ease of mobility based on a scale from 1 (very low mobility) to 10 (very high mobility). Self-reported assessment from client households. Performance measured through change from baseline, pooled by client cohort (intake year).	Client wellbeing survey facilitated by Household Navigator. Initial intake, followed by periodic updates. Data stored on HIFIS.	Coordinated Access System
		Affordability of transportation energy costs	2018-19	25.5%	2024-25	Decrease from baseline	Percent of households who self-report having difficulty affording their transportation energy needs. Measured through bi-annual community-wide survey. Percentages are based on projected future household growth as calculated in the Community Energy Investment Plan, with a basis in the 2016 Census.	Bi-annual community-wide Housing, Energy, and Transportation Survey, to be conducted in 2024-25. Data stored on municipal platforms.	Overall Program
More effective community services	11. Improve residents' access to community services	Level of satisfaction with access to community services for program clients	Client intake year	Average client intake value	2024-25	Increase from baseline	Satisfaction with access to community services based on a scaled rating system on a scale from 1 (very dissatisfied) to 10 (very satisfied). Self-reported assessment from client households. Performance measured through change from baseline, pooled by client cohort (intake year).	Client wellbeing survey facilitated by Household Navigator. Initial intake, followed by periodic updates. Data stored on HIFIS.	Coordinated Access System
	12. Improve community service delivery efficiency and effectiveness	Self-assessment rating by Coordinated Access System partners	2020-21	To be determined	2024-25	Increase from baseline	Self-assessment rating using Coordinated Access System (CAS) Scorecard Guide which is a 23 question self-assessment tool to assist communities to take a snapshot local progress towards a quality Coordinated Access System.	Annual survey of coordinated access system partners facilitated by Household Navigator. Data stored on Coordinated Access System service provider server.	Coordinated Access System
	13. Shift community service spending toward systemic solutions	Percent of resources spent making emergency energy payments on behalf of clients, compared to other areas of support	2020-21	To be determined	2024-25	Decrease from baseline	Percent of annual dollars spent making emergency energy payments on behalf of clients, compared to other areas of support, for all service organizations that provide emergency energy funding for program clients.	Annual survey of coordinated access system partners facilitated by Household Navigator. Data stored on Coordinated Access System service provider server.	Coordinated Access System

Table 2.10

CONTINUED



PERFORMANCE MEASUREMENT

Outcome Category		Performance Indicator	Baseline		Target		Methodology	Source	Tracking Program/System
			Year	Value	Year	Year			
Increased economic access & participation	14. Increase residents' income	Earnings from participation in energy systems by program clients	2020-21	To be determined	2024-25	Increase from baseline	Total annual dividends and other cashflow paid out to self-identified program clients from local energy investments.	Annual report on community investors produced by Financial Investment Vehicle. Data stored on Financial Investment Vehicle platform.	System
	15. Increase residents' participation in the green economy	Earnings from employment in the clean tech sector by program clients	Client intake year	Average client intake value	2024-25	Increase from baseline	Annual earnings from employment in the clean tech sector. Self-reported assessment from client households. Performance measured through change from baseline, pooled by client cohort (intake year).	Client wellbeing survey facilitated by Household Navigator. Initial intake, followed by periodic updates. Data stored on HIFIS.	Coordinated Access System
Achieved Climate Targets	16. Reduce greenhouse gas emissions	Greenhouse gas emissions from participating homes	Property intake year	Average property intake value	2024-25	Increase from baseline	Number of days per year that homes inhabited by program clients are sufficiently powered, heated, or cooled to a minimum level necessary for physical and mental wellbeing. Performance measured through change from baseline, pooled by property cohort (intake year).	Home energy monitoring system reports aggregated home energy consumption and emissions data. Data stored on municipal platforms.	Housing Energy Management System
	17. Community-wide shift to efficient, clean, affordable, and secure energy	Achieve the goals of the Community Energy Investment Plan	2016-17	2016 performance values	2024-25	Decrease from baseline	Key performance metrics articulated in the plan include: (1) community-wide energy consumption, (2) community-wide greenhouse gas emissions, (3) community-wide spending on energy, (4) community-wide investment in energy improvements, and (5) job creation resulting from energy investments. Implementation of the Energy Poverty Reduction Program will contribute strongly toward achieving these outcomes.	Annual indicator update by Planning & Recreation Department staff, and update of CEIP model and targets every 5 years. Data stored on municipal platforms.	Overall Program
Investment in communities	18. De-risk affordable energy investments in the community	Investment leverage ratio of capital improvement projects funded by the program	2020-21	To be determined	2024-25	To be determined	The ratio of all public instruments versus private sector investment in the program's capital projects (housing, transportation, and community energy systems). As both the costs of the public instruments as well as the energy investments occur over time, the present value of the costs and investments are used to calculate the investment leverage ratio. It is currently unclear what investment leverage ratio would be considered ideal for the program. This metric will be investigated during the program design stage.	Annual indicator update by Investment Navigator. Data stored on municipal platforms.	Investment System

Table 2.10

CONTINUED



PERFORMANCE MEASUREMENT

Outcome Category	Outcome	Performance Indicator	Baseline		Target		Methodology	Source	Tracking Program / System
			Year	Value	Year	Year			
Investment in communities	18. De-risk affordable energy investments in the community	Carbon abatement cost of capital improvement projects funded by the program	2020-21 Property intake year	To be determined	2024-25	Decrease from baseline	The present value of the incremental costs of the energy project investments divided by the greenhouse gas emission reduction potential. Reported as dollars per tonne of carbon abated. Climate change mitigation indicator. This metric will be investigated during the program design stage.	Annual indicator update by Investment Navigator. Data stored on municipal platforms.	Investment System
	19. Successfully fund energy poverty reduction solutions	Funding and investments toward the program	2018-19	\$250,000 Smart Cities Challenge finalist grant	2024-25	\$45.7 million	Total funding and investments in energy poverty reduction program, including local investments and stacked funding (e.g. grants, rebates, etc.).	Annual indicator update by Investment Navigator. Data stored on municipal platforms.	Investment System
	20. Demonstrate feasibility and effectiveness of program	Achievement of program outcomes	2018-19	No outcomes achieved	2024-25	Phase 3 outcomes achieved, positive evaluation by partners and participants	Achievement of program outcomes, and evaluation by partners and participants. Measured through comprehensive evaluation process for program partners and participants.	Annual indicator update by program managers. Data stored on municipal platforms.	Overall Program
Demonstration of impact	21. Inspire structural energy poverty solutions at the Provincial and Federal levels	Government policies or programs have been influenced by the Energy Poverty Reduction Program model	2018-19	No reported instances yet	2029-30	Increase from baseline	Number of senior government articles of legislation, policies, or programs that have been definitively influenced by the Bridgewater program. Measured through information sharing with Provincial and Federal governments.	Annual indicator update by program managers. Data stored on municipal platforms.	Overall Program
	22. Inspire other communities to adopt energy poverty reduction efforts	Other communities in Canada have been influenced by the Energy Poverty Reduction Program model	2018-19	No reported instances yet	2029-30	Increase from baseline	Number of other communities in Canada that attribute all or part of their energy poverty reduction efforts to the Bridgewater program. Measured through information sharing with other communities.	Annual indicator update by program managers. Data stored on municipal platforms.	Overall Program

Table 2.10

GOVERNANCE STRUCTURE

As a municipal service, the Energy Poverty Reduction Program falls under Bridgewater Town Council's oversight, and under management of the Chief Administrative Officer (CAO). Final design and implementation of the program will be the responsibility of the Community Development Department, with a number of related functions taking place through other departments. The following elements are proposed within the governance and management structure:

- **Energy Poverty Reduction Program**

Steering Committee: a formal Committee of Council that will provide advice to Council and staff on the design and implementation of the program. The Steering Committee will assist with maintaining community partnerships, and participate in program evaluation and quality review. It will participate, as appropriate, in client dispute resolution through an ombudsperson, and meet periodically with a Client Advisory Circle to receive client feedback. It is envisioned as a 6-10 member group, consisting of key program partners from the local community sector as well as regional organizations with expertise in energy and housing, such as Efficiency Nova Scotia. A member of Town Council will also sit on the Committee. Committee members do not receive compensation for their role through the

Town, though some members may be paid staff from other organizations. The Committee will be resourced and supported by Town staff who coordinate and implement the program. A Terms of Reference for the Committee will be developed, and the Committee positions will be filled as one of the earliest activities in Phase 1.

Collaborating as a group to help solve problems is often much more effective than organizations trying to do it on our own.

— COMMUNITY SERVICE ORGANIZATION

- **Ombudsperson:** clients whose complaints about the program are not able to be resolved by program management may escalate their complaint to the Ombudsperson. This person is charged with representing the interests of program clients by investigating and addressing complaints. The Ombudsperson is recommended by the Steering Committee, and will be an external, independent expert with knowledge of the program. They will receive compensation for their work on a per diem basis. A role description for the Ombudsperson will be developed during Phase 1.
- **Client Advisory Circle:** prospective, current, and past clients of the program

are recruited to participate in this advisory structure to provide periodic feedback to the Steering Committee and the program management team. The Client Advisory Circle is consulted on matters related to program design and implementation, quality, accessibility, affordability, fairness, and overall impact of the program. As the program clients include both households-at-risk as well as property owners, the Client Advisory Circle will represent both. Client Advisory Circle members receive a per diem to cover their participation, to reduce the risk that financial barriers will prevent effective participation. A Terms of Reference for the Client Advisory Circle will be developed as one of the earliest activities in Phase 1.

- **Technical Advisory Circle:** an ad-hoc working group that supports the program management team in the design and implementation of the program. The Technical Advisory Circle provides voluntary, independent, expert advice and project support to Town staff. A Terms of Reference for the Technical Advisory Circle will be developed as one of the earliest activities in Phase 1.
- **Program Coordinator:** the Community Development Department will put its staff

in charge of the overall coordination of the program. The Energy Poverty Reduction Program Coordinator reports to Senior Manager and through the CAO to Town Council. This staff is also the main resource to the Steering Committee. As this coordination role is critical to all components of the program, the job description(s) for staff will be developed and/or updated, and any necessary hiring completed before Phase 1 begins.



A Bridgewater resident views an exhibit on energy poverty at a Smart Cities Challenge Open House.

- **Municipal Program Management:** day-to-day management of the 4 linked municipal services (the Housing Energy Management System, Community Energy Systems, the Mobility Improvement System, and the Investment System) will fall to municipal staff. Activities within each program will be a combination of staff effort and procured third-party services. Technical Navigators and an Investment Navigator provide services both to program clients and to program managers, while an Information Systems Specialist provides

It would help so that we wouldn't have to scurry around, one call request for assistance requires 8 other calls; if we would just network it would make it easier.

– COMMUNITY SERVICE ORGANIZATION

data management services within the program. Quality control and evaluation is carried out by staff, in partnership with the Steering Committee. Full descriptions of these positions will be developed before Phase 1 begins, and any necessary hiring will commence as one of the earliest activities of Phase 1.

- **The Coordinated Access System** will be managed by a third-party service provider with its own management and governance systems. Household Navigators are employed by the service provider. A partnership or service agreement defines the relationship between the Town and the external organization, as well as the responsibilities of both parties. See the **Performance Measurement Chapter** for a more detailed description of

the service procurement process and anticipated timelines.

- **The Financial Investment Vehicle**, a sub-component of the Investment System, will be managed by a third-party service provider with its own management and governance systems. A partnership or service agreement defines the relationship between the Town and the external organization, as well as the responsibilities of both parties.

See the **Performance Measurement chapter** for a more detailed description of the service procurement process and anticipated timelines.

The relationship between most of the governance and management structures described above are illustrated in the following in Diagram 3.1.

Program Governance and Management

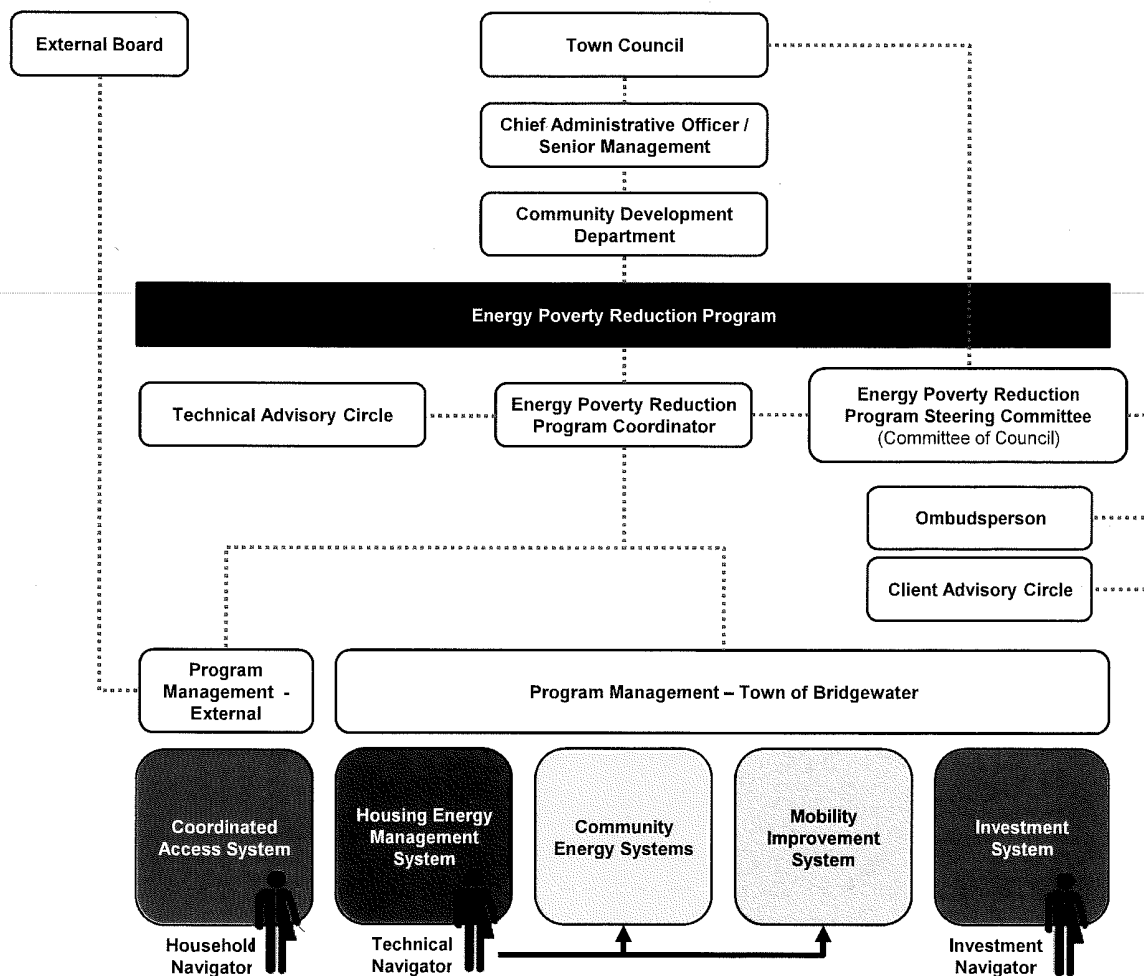


Diagram 3.1

EVALUATION, RISK MANAGEMENT, AND QUALITY CONTROL

Program staff will lead ongoing monitoring and reporting of program outputs as well as outcome indicators throughout all phases of the program. Monitoring and reporting responsibilities are divided by program, as defined in the **Performance Measurement chapter**. Performance measurement for activities that fall under “overall program management” are the primary responsibility of the Energy Poverty Reduction Program Coordinator, with the support of the Steering Committee. Annual reports will be generated for all program services, and shared widely with program stakeholders including Bridgewater Town Council. In its reports, staff will ensure that all identifying personal and business information is reported in aggregate unless express permission is given to share the information publicly.

See the **Engagement chapter** for information on how the program will maintain evaluation engagement with all its stakeholders.

All structures and members within the program governance and management system also have defined roles to play in the program’s risk management and quality control processes. While risk management and quality control oversight ultimately rests with Bridgewater Town Council

and the Chief Administrative Officer, the lead role for ongoing risk management and quality control activities will be delegated to program staff throughout all phases of the program. The risk management framework and quality control processes, including program governance risks, are described in the **Project Management chapter**. These activities will involve all other structures and members on a periodic basis, with additional involvement as needed. Key among these will be the Energy Poverty Reduction Program Steering Committee, which will be kept informed of emerging risk and quality control issues, and consulted on mitigation strategies.

PARTNER COMMITMENTS

We are pleased to report that a large and diverse group of program partners and supportive organizations have pledged their support for Bridgewater's proposed program. Partner commitments are described below, grouped by program service:

HOUSING ENERGY MANAGEMENT SYSTEM AND COMMUNITY ENERGY SYSTEMS

- **Green Power Labs** – Committed to the development and integration of the Energy Management Information System, engineering and integration of the real time operations (RTO) system, general technology development, and support and operations in the Town of Bridgewater up to 2030.

- **Efficiency Nova Scotia** - Committed to partnering on detailed program design and delivery of the Housing Energy Management System. This includes the provision of energy efficiency services and financial incentives for retrofits and new construction. Advisory support is provided through the Energy and Financing Working Group.
- **TownSuite Municipal Software** – Expressed interest in exploring the expansion of existing municipal software with the addition of an energy management information system (EMIS) module, with the eventual expansion into real time operations (RTO) functionality. Supportive of exploring the possibility of the enterprise resource planning (ERP) system backbone to support the program and develop the Client Mobility Application module.
- **Clean Foundation** - Committed to the provision of expertise, service delivery and design for the residential energy efficiency retrofit program. Clean Foundation will share data, and related financial and technical learnings of a recently piloted Net Zero retrofit program in Bridgewater.
- **Nova Scotia Power** - Nova Scotia Power will support access to the AML and the Green Button initiative, offer financing for heat pumps for home retrofits, and provide support for connected technology solutions and applications, as well as expertise for

charging stations for electric public transport.

- **St. Mary's University – Faculty of Science** – Committed to the provision of significant contributions in collaboration with Green Power Labs towards Big Data Management, Data Science, Machine Learning, and other aspects of Artificial Intelligence of the project.
- **Dalhousie University – Faculty of Computer Science** - The Smart City Research initiative of Dalhousie University is committed to partnering with Bridgewater to implement the Energy Poverty Reduction Program by providing advisory support. Advisory support is provided through the Energy and Financing Working Group.
- **Nova Scotia Department of Energy and Mines** – Committed partner on the implementation of the Community Energy Investment Plan and the Energy Poverty Reduction Program. Advisory support is provided through the Energy and Financing Working Group.
- **Affordable Energy Coalition** – Continued efforts to influence provincial policy and programs to further support energy poverty reduction efforts and inspire other communities to adopt Bridgewater's model. Further aid in knowledge sharing on how to best work with landlords in implementing energy retrofits.
- **Housing Nova Scotia** – Committed to exploring a partnership for upgrade

referrals and continuing to provide up to date information on programs, funding, and housing stock. In addition, exploring a relationship to monitor and reduce the energy consumption of public buildings.

- **Ecology Action Center** – Committed to providing program education, advocacy, and engaging landlords in the proposed retrofit program.
- **Quality Urban Energy System of Tomorrow (QUEST)** – Prepared to disseminate program information to other municipalities through a Municipal Energy Learning Group and the QUEST NS Buildings Working Group. As one of five regional advisors for the Partners for Climate Protection program, QUEST will share replicable aspects of this program widely within the country. Committed to providing advisory support through the Energy and Financing Working Group.

MOBILITY IMPROVEMENT SYSTEM:

- **Nova Scotia Community Transportation Network** – Committed to promoting Bridgewater's transportation model to other rural communities in Nova Scotia and strengthening the network of relationships between non-traditional for-profit and non-profit community-based transportation providers.
- **Bridgewater Active Transportation**

Advisory Committee – Committed to advising the town in its efforts to become an active transportation-supportive community, including putting an AT lens on town infrastructure, programs, policy and projects, and increasing partnerships promoting active transportation.

INVESTMENT SYSTEM:

- **New Dawn Enterprises** – Committed to potentially partnering with the Town of Bridgewater to establish a centralized CEDIF platform if it is selected as a community-investment tool. Advisory support is provided through the Energy and Financing Working Group.
- **Energy Services Association of Canada (ESAC)** – Members are committed to engaging in a competitive tendering process to demonstrate innovative ways to work with and be an integral part of Bridgewater's Smart City vision.

COORDINATED ACCESS SYSTEM:

- **Freeman House in association with Family Services of Western Nova Scotia** – Committed to partnering with the Town to administer the Coordinated Access System, provide guidance and support for system setup, on-going operations, communications, and in-kind support through staffing.
- **Nova Scotia Health Authority** – Committed

to championing work within their networks and among community members through a Coordinated Access System, working with experts to develop an energy poverty index using health system data, and facilitating collaboration with other NSHA programs.

- **Nova Scotia Community College, Lunenburg Campus** – Committed to providing education and training opportunities through the Work Integrated Learning Programs, partnering with their Women Unlimited program to help showcase women in non-traditional trades and technology workplaces, integrating into a Coordinated Access System, and ultimately exploring the creation of new programming opportunities in the areas around Green Energy and Technologies.
- **South Shore Housing Action Coalition** – Prepared to support the program in an advisory capacity, engage its broad spectrum of members, and to support and facilitate the sharing of information about the project.
- **Service partners** committed to continued project engagement for the planning of a measurable, manageable and effective Coordinated Access System, and acting as referral and outreach agents, in the promotion, enhancing, and navigation of community resources through the system. These partners include: **Society St. Vincent de Paul; The Ark and Support Services Group;**

Second Story Women's Center; Lunenburg County YMCA; United Way Lunenburg County; Salvation Army Bridgewater, N.S.; South Shore Family Resource Center; Big Brothers, Big Sisters of South Shore; Be the Peace Institute; Bridgewater and Area Lions Club; Bridgewater Law Office (Nova Scotia Legal Aid); Nova Scotia Works; Bridgewater Food Bank; Family Support Center; Souls Harbour Rescue Mission, Bridgewater; SchoolsPlus; Small World Learning Center.

OVERALL PROGRAM SUPPORT

- **Halifax Regional Municipality** – Committed to sharing information on climate change related initiatives.
- **Government of Nova Scotia** – Committed to supporting the Town as a climate change leader.

Letters of support confirming all these commitments are provided in the Appendix. Additional letters of support that are confidential in nature because they contain sensitive market information are provided in the Confidential Annex.

DATA AND INFORMATION GOVERNANCE

Data and related infrastructure, along with the technologies and services for the Energy Poverty Reduction Program are key to the success,

transferability and replicability of the program. Data governance must ensure that digital solutions both improve the liveability and wellbeing of the households-at-risk of energy poverty, and also meet democratic, privacy, and quality standards appropriate for a project of this scale.

At the core of municipal data governance lies the question of what communities can do in order to manage data in the best interest of their community members and the stakeholders at large without jeopardising privacy and security, and the potential business opportunities that lie within municipal data sets. This eventually leads to a fundamentally new form of public-private partnerships with data as the instrument. In developing this Energy Poverty Reduction Program, we have begun to develop a data governance policy which will need further refinement in the early stages of the program development. This needs to be undertaken in conjunction with the technology and data platform development process. This is discussed in further detail in the **Data and Privacy chapter**.

To develop a strong municipal data governance system for our Energy Poverty Reduction Program, the Town will be carefully considering the following questions and working with our community partners and participants to determine how we will manage the great deal of data and information sharing that is inherent in a smart cities approach.

- What strategies and approaches do

communities need to follow to enable third-parties to share their data with the Town of Bridgewater?

- How can the Town remain the decision maker about data usage in public-private partnerships or in data-driven projects that impact the common good?
- What are the lines of decision making and how can the Town create transparent systems that show the existing trade-offs between public and private interests?
- What resources and skills are needed in Bridgewater to moderate data-related decision making?
- How can communities successfully initiate and steer pilot projects on municipal data?
- How do communities ensure ownership of the data in public contracts?
- What data should be provided as open data by the Town and how can communities arrive at a decision about this?
- How can communities embed their policy requirements in municipal data platforms?

The **Data and Privacy chapter** provides preliminary responses to the above questions. Additional work needs to be done during the detailed program design process to fully develop the Energy Poverty Reduction Program data governance framework. Concerns about data are detailed in the risk management section in the **Project Management chapter**.

COMMITMENT TO INNOVATION AND ENERGY POVERTY REDUCTION

Over the past decade, the Town has been an active partner in multi-sectoral initiatives around topics as diverse and complex as food security, affordable housing, youth retention, health services planning, seniors safety, transportation, gender-based violence prevention, alcohol harm reduction, economic development, and a variety of community development initiatives.

The implementation of our ground-breaking Community Energy Investment Plan (2018) remains Town Council's key area of focus, and holds a priority status in the Town's Economic Development Action Plan (2018). The Town has publicly affirmed its commitment to implementing a broad spectrum approach to energy transition and energy poverty alleviation, including the new and innovative solutions that participation in the Smart Cities Challenge has helped us to identify and design.

PROJECT MANAGEMENT CAPABILITY

The Town of Bridgewater has worked hard to expand its highly qualified staff team to the point where it can confidently manage the detailed design and set up of the Energy Poverty Reduction Program. Initial lead staff on this file will include:

- Tammy (Crowder) Wilson, CAO. Tammy has over 20 years' experience in municipal government. She has worked on energy projects including wind energy and anaerobic digestion projects under the Nova Scotia's COMFIT program. She has also facilitated a partnership with the private sector to see landfill material turned into a marketable commodity and increase landfill diversion. Tammy has led the regionalization of some municipal services along the south shore, including participating in the development of several municipal corporations.
- Jessica McDonald, Director of Community Development. Jessica spent over a decade coordinating multi-sectoral environmental policy initiatives and programs for the Province of Nova Scotia. In Bridgewater, her accomplishments include stewarding the design and implementation of the Town's ambitious Pijinuiskaq Park and King Street streetscape enhancements, and overseeing the development of its first fixed route public transit service.
- Leon de Vreede, Sustainability Planner. Leon has managed the Town's sustainability program for over 10 years. Specializing in innovative planning, program design, and community engagement practices, Leon's work has been recognized by the Province of Nova Scotia through an inaugural Clean Climate Leader award in 2015, and by the

Federation of Canadian Municipalities through his designation as a PCP Local Climate Change Hero in 2016. Leon will function as Program Coordinator for the proposed program.

- Greg Goubko, Energy Finance & Development Coordinator. Greg has spent the past 4 years working at the Toronto Renewable Energy Co-op/Tapestry Community Capital as the Community Investment Manager. He has recently joined the Town of Bridgewater to help with the implementation of the Community Energy Investment Plan and the Smart Cities Challenge project. He brings a wealth of knowledge related to community financing and local investment.
- Myles Cornish, On-Site Energy Manager. Myles is a Professional Engineer, working for Bridgewater under contract for Efficiency Nova Scotia. Aided by his extensive network throughout the Efficiency Nova Scotia organization as well as to external trade partners, Myles brings the core engineering expertise to the table that is needed to design and implement the infrastructure solutions proposed by the program.

Project management decisions will be made by the Director of Community Development and the CAO, and key decisions that affect town services (e.g. selection of technology partners, and key program design considerations) will be brought to Council for direction. The Steering Committee

will review all project documentation (including staff-generated reports, RFPs and Terms of Reference, and consultant and legal reports) and provide feedback and guidance to staff throughout the process.

PROGRAM DEPLOYMENT

Lifting our residents out of energy poverty is an ambitious outcome, which will many activities and deliverables along the way. A detailed discussion of the program activities and outputs (deliverables) are contained in the **Performance Management chapter** and includes a comprehensive list of indicators to help us measure and monitor our progress. Resource assessment for each element of the Energy Poverty Reduction Program is also discussed in that chapter. This includes details on program design, staffing, technology, partner and stakeholder engagement, procurement processes and needs, legislative and regulatory approvals, database and technology needs, administration, communications and evaluation. Costs associated with each program area, including the proposed use of the Finalist Grant, is provided in the **Financial chapter**, Tables 9.1 through 9.14. Strategies for engagement with partners, stakeholders, and target clients for the program are discussed in the **Engagement chapter**. This includes strategies for ensuring that our program is designed to be meaningful, fair and impactful for the broad range of residents who find themselves

struggling to pay their energy bills in the face of all the other household priorities and hurdles.

The Energy Poverty Reduction Program consists of a set of 5 interconnected systems that will be deployed in 4 phases; each building off each other with some overlap in the early phases.

1. Prototype Program Setup - This phase includes partnership development; detailed service and technical design; service procurement; client consultation; a comprehensive Privacy Impact Assessment (PIA) on the detailed program design and an overarching privacy policy.

2. Prototype Program Testing & Refinement - This phase involves a gradual ramping up of client intake; continuing design and implementation of services and

technologies; and monitoring and evaluation of results. Program outcomes become measurable by end of this phase.

3. Final Program Activation - This phase requires the finalization of program service design and technical components; extensive documentation of program outcomes; and the development of learning materials for other communities and senior governments. The completion of the Final Program Activation phase marks the end of Smart Cities Challenge contribution agreement.

4. Program Maturity - This phase includes ongoing client intake; program evaluation and improvement as well as the integration of new and emerging community energy technologies and solutions.

Program Deployment Phases and Households Served by Program Year

Program Year	2020-21	2021-22	2022-23	2023-24	2024-25	Total
Phase	1: Prototype Program Setup					
		2: Prototype Program Testing & Refinement				
				3: Final Program Activation		
						4: Program Maturity
Households Served	0	50	75	100	125	750 over 5 years
Relationship to Smart Cities Challenge (SCC)	Within SCC Program & Funding					After SCC

Table 4.1

When people are in a crisis, they need manageable steps to be able to navigate the system of services.

— RESIDENT, TOWN OF BRIDGEWATER

Table 4.1 describes the timing of phases and the number of households served. As stated early on in the project overview, households-at-risk are less likely to also be the property owner. So the number of households served will account for both the inhabitants and the property owners of the properties they inhabit.

The extended period of prototyping, evaluation and improvement ranging from fiscal year 2021-22 to 2024-25 has been purposefully planned in recognition of the complexity of the program and the need for frequent review and adjustment of goals and solutions. This approach to prototyping is in line with smart cities approaches that revolve around continuous learning and feedback cycles using program metrics and client and partner evaluation.

This approach has also been selected to support a robust risk management process that will ensure program risks and challenges arising from program activities, outputs, and outcomes are mitigated in real time and that emerging risks are being identified before they create problems. In particular, 4 key program risks

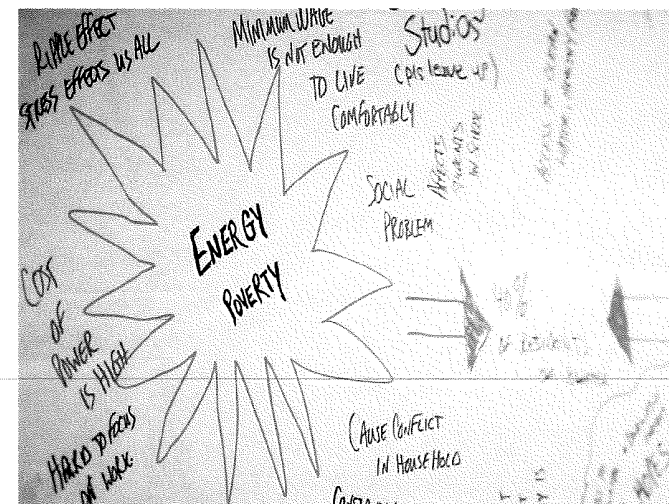
will be continuously assessed and mitigated through this phased deployment:

- Program uptake risk: uncertainty as to the willingness of households-at-risk and property owners to participate in the program
- Financial risk: uncertainty in program costs and sources of funding and investment
- Technical risk: uncertainty in database development timeframes and functionality
- Supply chain risk: uncertainty in the availability of skilled labour to complete the envisioned infrastructure improvements

The project risks and mitigation strategies are comprehensively discussed in the next section of this chapter.

Risk Management Framework

Project risks and their respective mitigation strategies related to all other chapters in this application are fully described in this section. As described in the **Performance Measurement chapter**, the Energy Poverty Reduction Program will measure the progress toward its outputs and outcomes through an iterative process of design, prototyping, and evaluation. This approach will ensure that program risks and challenges arising from program activities, outputs, and outcomes are being mitigated in real time. It also supports the program's governance, evaluation, and quality control needs.



Notes from a discussion at a Smart Cities Challenge workshop.

Connecting these elements is the program's risk management framework, which consists of the following components:

- an analysis of program risks
- a set of overarching risk management strategies
- a series of course correction checkpoints and risk mitigation options for the program

ANALYSIS OF PROGRAM RISKS

Table 4.2 identifies significant program risks based on the theme of specific chapters within this application, as well for the overall program. Risk probability and risk impact are both measured on a relative scale of 1 (low), 2 (moderate), and 3 (high).

Risk Assessment by Program

Risk Category	Risk	*Risk Probability	*Risk Impact	Description of Impact	Risk Summary	Monitoring & Reporting on this Risk
Overall Program	Smart Cities Challenge grant not achieved	3	3	Lack of funding for program development. Program unlikely to be implemented as proposed, and/or over much longer timeframe.	Significant risk, not easily mitigated	Proposal evaluation by Jury
	Substantial economic downturn affects overall ability to secure financing & funding	1	3	Lack of program funding. Program may need to be implemented over much longer timeframe.	Significant but unlikely risk, partially mitigatable	Investment System
	Program fails to lift residents out of energy poverty, or affect systemic change as envisioned	2	3	Affects program targets, performance measures, and ability to meet outcomes.	Significant risk, partially mitigatable	Overall Program Management
Performance Measurement	Program is too complex for clients, partners, and service providers to navigate or maintain	2	2	Affects ability of clients/partners/service providers to navigate program structures and processes. Reduces client, partner, and service provider participation rate. Delays program implementation. Adds to program cost. Affects program targets, performance measures, and ability to meet outcomes.	Moderate risk, partially mitigatable	All program services
	Performance indicators cannot be measured as expected	2	1	Affects performance measurement and outcomes monitoring.	Minor and mitigatable risk	All program services
	Actual energy poverty rate is different than currently understood (38.5%)	2	2	Affects program targets, performance measures, and ability to meet outcomes. May not be able to be measured accurately.	Moderate but mitigatable risk	Overall Program Management
Governance	There is insufficient capacity/interest by program partners to maintain effective program governance & evaluation	1	2	Program implementation responsibility rests too heavily on Town of Bridgewater. Community champions lacking. Reduced program uptake. Reduced program quality.	Moderate but unlikely risk	Overall Program Management
	Client or partner makes complaint that is unable to be resolved	2	2	Additional strain on program resources & management. May escalate into legal or regulatory action against program. Affects public perception of program.	Moderate but mitigatable risk	All program services and Ombudsperson
Project Management	Contractor & supply chain capacity is lower than anticipated	3	3	Delays program implementation. May affect program quality. Likely to increase program costs.	Significant risk, not easily mitigated	Housing Energy Management System, Community Energy Systems, and Mobility Improvement System
	Key service delivery partner defaults on contract or experiences loss in capacity to carry out responsibilities	1	3	Delays program implementation. May affect program quality. May increase program costs. May lead to client/partner dissatisfaction as a result of interrupted service.	Significant but unlikely risk, partially mitigatable	All program services
	Regulatory, cost, and project management uncertainty in deployment of development and financing structures	3	2	Program design cannot be finalized until development and financing structures are confirmed. Affects cost and project management assumptions, as well as procurement and partnership design. Creates overall program uncertainty. Lack of resolution within reasonable timeframe affects program targets, performance measures, and ability to meet outcomes.	Moderate risk, partially mitigatable	Investment System and Community Energy Systems



PROJECT MANAGEMENT

Risk Category	Risk	*Risk Probability	*Risk Impact	Description of Impact	Risk Summary	Monitoring & Reporting on this Risk
Project Management	Challenges finding or retaining qualified staff to manage the program	1	2	May delay program implementation or affect program continuity. May affect program quality. May increase program costs. May lead to client/partner dissatisfaction as a result of interrupted service.	Moderate but unlikely risk	All program services
	Legislative & regulatory barriers prevent deployment of community energy solutions or delay their deployment	2	2	Delays project implementation. Affects program targets, performance measures, and ability to meet outcomes. May result in energy affordability and security goals not being met.	Moderate risk, partially mitigatable	Community Energy Systems
	Technical assessment/due diligence studies of community energy systems yield unfavorable results or take longer than anticipated	2	2	Delays project implementation. Affects program targets, performance measures, and ability to meet outcomes. May result in energy affordability security goals not being met.	Moderate but mitigatable risk	Community Energy Systems
Technology	Development of core data platform solutions is more technically complex, costly, or time-consuming than anticipated. Scope creep.	2	3	Delays program implementation. May affect program quality. Likely to increase program costs.	Significant risk, not easily mitigated	All program services
	Anticipated data platform partners not interested in participating	2	2	Delays program implementation. May affect program quality. Likely to increase program costs. May result in interoperability challenges.	Moderate risk, partially mitigatable	All program services
	Technological disruption causes dramatic change in cost or ability to implement planned technological solutions	1	2	Effects generally unknown - may enhance or hinder program implementation, including costs and ability to meet outcomes.	Moderate but unlikely risk	All program services
Data and Privacy	A data security breach occurs in one or more data platforms	1	3	May compromise client and partner data, including personal and corporate information. May result in program shutting down operations to address security breach. May erode trust in the program and affect the program's ability to attract clients and service providers, affecting program outcomes.	Significant but unlikely risk, partially mitigatable	All program services
	Program participants' concerns about privacy are not satisfied, leading to low uptake rates/negative publicity	1	2	May affect the program's ability to attract clients and service providers, affecting program outcomes.	Moderate but mitigatable risk	All program services and Ombudsperson
	Program partners are unable or unwilling to share all or part of anticipated data	2	2	May affect program's ability to track clients, partners, and outcomes indicators. May affect program quality.	Moderate risk, not easily mitigated	All program services
	A data platform experiences a service delivery problem or unexpected failure	1	3	May result in program shutting down operations temporarily. May erode trust in the program and affect the program's ability to attract clients and service providers, affecting program outcomes. May affect program quality. May increase program costs. May lead to client/partner dissatisfaction as a result of interrupted service.	Significant but unlikely risk, partially mitigatable	All program services
Engagement	Program delays or challenges result in negative publicity in community and beyond	1	2	May affect the program's ability to attract clients and service providers, affecting program outcomes.	Moderate but mitigatable risk	All program services



PROJECT MANAGEMENT

Risk Category	Risk	*Risk Probability	*Risk Impact	Description of Impact	Risk Summary	Monitoring & Reporting on this Risk
Engagement	Program is ineffective at reaching clients who are most in need	2	2	Program outcomes not achieved. Energy poverty rate not reduced as quickly as anticipated. Negative publicity may affect the program's ability to attract clients and service providers, further affecting program outcomes.	Moderate risk, partially mitigatable	Housing Energy Management System and Coordinated Access System
	Program uptake (households-at-risk) is lower than anticipated	1	2	Program outcomes not achieved. Service contract thresholds not reached. Energy poverty rate not reduced as quickly as anticipated.	Moderate but unlikely risk	Coordinated Access System
	Program uptake (property owners) is lower than anticipated	2	3	Program outcomes not achieved. Service contract thresholds not reached. Energy poverty rate not reduced as quickly as anticipated.	Significant risk, not easily mitigated	Housing Energy Management System
	Program uptake in general is higher than anticipated	2	2	Additional strain on program resources and management. Dissatisfaction in community if waiting list grows.	Moderate but mitigatable risk	Housing Energy Management System and Coordinated Access System
Financial	Legislative & regulatory requirements are not met or delayed, including expectations around regulatory changes	2	2	Delays project implementation. Affects program targets, performance measures, and ability to meet outcomes. May result in energy affordability and security goals not being met.	Moderate risk, partially mitigatable	All program services
	Major regulatory change causes disruption to program	1	2	Effects generally unknown - may enhance or hinder program implementation, including costs and ability to meet outcomes.	Moderate but unlikely risk	All program services
	Program costs are higher than anticipated. May arise from currency risk	2	3	May make housing, transportation, and community energy system improvements unattainable or only partially attainable. Increases demands on funding/financing. Delays program implementation. May affect program quality.	Significant risk, partially mitigatable	All program services
	Funding from financial investors lower than anticipated	2	3	May make ROI components of program unattainable or only partially attainable. Increases demands on non-investor funding. Delays program implementation. May affect program quality.	Significant risk, not easily mitigated	Investment System
	Funding from social investors (government, foundations) lower than anticipated	2	3	May make non-ROI components of program unattainable or only partially attainable. Increases demands on debt financing. Delays program implementation. May affect program quality.	Significant risk, not easily mitigated	Investment System
	Home energy savings are lower than anticipated as result of inaccurate estimates	1	3	Affects cashflow of property owners and possibly tenants. May not achieve poverty reduction outcomes. May make poverty issues worse. Negative client experience. Affects public perception of program.	Significant but unlikely risk, partially mitigatable	Housing Energy Management System
	Home energy savings are lower than anticipated as result of insufficient funding	2	2	Affects cashflow of property owners and possibly tenants. May not achieve poverty reduction outcomes. Affects public perception of program.	Moderate risk, not easily mitigated	Housing Energy Management System
	Home energy savings are lower than anticipated as result of conventional energy prices being lower than anticipated	1	2	Affects cashflow of property owners and possibly tenants. May not achieve poverty reduction outcomes. May make poverty issues worse. Negative client experience. Affects public perception of program.	Moderate but mitigatable risk	Housing Energy Management System

Risk Category	Risk	*Risk Probability	*Risk Impact	Description of Impact	Risk Summary	Monitoring & Reporting on this Risk
Implementation Phase Requirements	Collaboration with First Nations communities is less robust than expected	2	1	Missed opportunity for reconciliation, partnership, economic development, and cultural exchange.	Minor risk, not easily mitigated	All program services
	Diversity targets not met for recruitment, training, and procurement as per Community Employment Benefit (CEB) reporting	2	1	Inequitable distribution of community economic benefits. Missed opportunity to build program strength by learning from disaffected segments of the community.	Minor and mitigatable risk	All program services
	Legislative & regulatory requirements are not met or delayed, including expectations around regulatory changes	2	2	Delays project implementation. Affects program targets, performance measures, and ability to meet outcomes. May result in energy affordability & security goals not being met.	Moderate risk, partially mitigatable	All program services
	Major regulatory change causes disruption to program	1	2	Effects generally unknown - may enhance or hinder program implementation, including costs and ability to meet outcomes.	Moderate but unlikely risk	All program services

Table 4.2

RISK MANAGEMENT STRATEGY 1: ESTABLISH CORE RISK MANAGEMENT STRUCTURES & PROCESSES

During the first year of the program (fiscal year 2020-21) a set of 7 program structures and processes will be put in place to establish an overall risk management process.

- **Governance Structure & Commitments:** establish an effective program governance structure as described in the **Governance chapter**. Effective risk management across all risk areas begins with strong governance. Effective governance requires long-term commitments from key program partners as they participate in key roles on the Energy Poverty Reduction Program Steering Committee.

- **Management Structure & Capacity:** establish an effective program management team with the capacity to implement the program, as described in the **Governance chapter** and earlier in this chapter. Qualified staff working under diligent oversight by Bridgewater Town Council and the Chief Administrative Officer will ensure that a broad range of program risks are minimized by having outputs achieved effectively and on budget. Management relationships with external organizations, in particular for the Coordinated Access System and the Financial Investment Vehicle, will reduce program risk through strong service contracts and/or partnership agreements, with responsibilities, deliverables, and timelines clearly defined.

- **Evaluation Process:** Phase 1 of the program will start with the program evaluation process already active, so that the process can support the program setup work from the very beginning, allowing staff and program partners to identify, communicate, and manage any and all program risks as they emerge. Effective and timely performance tracking mitigates risk through the early identification of areas where program deliverables are falling short or experience implementation delays, allowing for course corrections. Year 1 of this process will also involve the review of program indicators so that adjustments can be made to performance measurement methodologies and targets. The evaluation process and the program outputs and

outcomes it will measure are described in the **Performance Measurement chapter**.

- **Communications System:** ensuring timely and effective communications between program governance, program management, program partners, and program clients mitigates program risk by reducing opportunities for misunderstanding, speeding up processes, and maintaining cohesion across the multiple service areas. Detailed communications strategies will be developed for program services with high community engagement and marketing needs. Program communication will ensure cautious and transparent communication with residents on their rights related to sharing data, who will be able to see their data, and how it will be stored. Strong communication regarding the confidentiality of participants' sensitive information will be ensured to maintain trust with participants and ensure that at-risk, and vulnerable populations are insulated from potential risks for sharing sensitive information when accessing services. Program communications are the responsibility of all program managers, and are overseen by the Program Coordinator.
- **Quality Control / Quality Assurance Process:** The system to maintain the

standards of the Energy Poverty Reduction Program consist of a three-level hierarchy of controls. The first level, and closest to the client, consists of an Ombudsperson and a Client Advisory Circle. These roles relate to communicating client experiences directly to the program governance and management teams, and resolving client complaints, program quality concerns, and program impact deficiencies. They are further described in the **Governance chapter**. If quality control has not been assured via the first-level supports, then issues can escalate to the Program Steering Committee where authority to make program decisions to ensure ongoing quality will be granted in the Terms of Reference. If quality control concerns exist after this second-level support, concerns can be directly expressed to the Town Council, who maintains the ultimate authority over all municipal programs.

- **System Gap Analysis Review Process:** Through the evaluation framework, emergent risks are continuously monitored across all program areas. Among these, a key risk relates to a lack of program accessibility. This is mitigated by continuously asking about whether client and stakeholder needs are being met, or

whether people are 'falling through the cracks' as a result of system gaps. System gaps are also mitigated through regular contact with the Client Advisory Circle, which provides a direct channel for program clients to communicate unmet needs.

- **Privacy Review Process:** To ensure all privacy related precautions are met and data and privacy breaches are mitigated, the entire program will be evaluated from a privacy perspective through the completion of a comprehensive PIA coupled with an overarching Privacy Policy. To ensure both documents are adequate and adhere to standard privacy practices the Town will consult with privacy experts throughout the first year of the program and for all aspects of the program design.

These structures and processes will be designed, implemented and evaluated by the program management team as part of the delivery of outputs related to Overall Program Management. Major risk management checkpoints for this strategy are 6 months into year 1 (October 2020), and 11 months into year 1 (February 2021). These timeframes allow critical course corrections to be made through the risk mitigation options available at each stage (see below).

RISK MANAGEMENT STRATEGY 2: CONFIRM FEASIBILITY OF PROGRAM

Each program service will undergo a detailed feasibility reviews 6 months before the end of Phase 1 (October 2021), and 6 months before the end of Phase 2 (October 2023), so that overall program feasibility can be assured by Phase 3 (Final Program Activation). Completing feasibility checks, and making any necessary course corrections, also helps ensure that Phase 1 and Phase 2 outputs can be achieved on time. As a risk mitigation strategy, feasibility will be assessed based on 9 areas of program performance.

These feasibility assessments will be completed by the program management team, and will allow critical course corrections to be made through the mitigation options available at each stage (see Table 4.2).

RISK MANAGEMENT STRATEGY 3: ESTABLISH CONTINUOUS MONITORING & IMPROVEMENT SYSTEM

Following the successful completion of Phases 1 and 2, risks related to program feasibility will have been assessed and mitigated, and the program will transition through Final Program Activation (Phase 3) into Program Maturity (Phase 4).

This transition will require an amended risk management strategy, which is to deliver these risk management functions through a system of continuous monitoring and improvement.

Program Feasibility Assessment and Criteria

Feasibility Assessment	Feasibility Assessment Criteria
Client Participation	<ul style="list-style-type: none"> Client participation rates are sufficient to meet program objectives and performance measures The program sufficiently meets client satisfaction and needs The program is sufficiently accessible to intended clients
Service Costs	<ul style="list-style-type: none"> Current and future service costs are sufficiently known to enable service delivery planning and contracts Service costs are within tolerable thresholds to meet program objectives and performance measures
Service Capitalization	<ul style="list-style-type: none"> Current and future revenue sources are sufficiently known to enable service delivery planning and contracts Revenue sources are within tolerable thresholds to meet program objectives and performance measures The program sufficiently meets funder and investor satisfaction and needs
Data Availability	<ul style="list-style-type: none"> Data governance processes and agreements meet partners' and clients' needs Sufficient data is available to enable service delivery planning and contracts Key partners and service organizations are able to share sufficient data to meet program objectives and performance measures
Data Platform Setup	<ul style="list-style-type: none"> Data platforms have the minimum functionality required to achieve program objectives and performance measures Data platforms have sufficient oversight, quality control, and security in place to meet partners' and clients' needs
Technical Solutions	<ul style="list-style-type: none"> Energy management solutions are sufficiently known to enable service delivery planning and contracts Performance of energy management solutions is sufficiently measurable to meet program objectives Energy management solutions are sufficient to meet program objectives and performance measures Energy management solutions sufficiently meet client satisfaction and needs
Supply Chain & Procurement	<ul style="list-style-type: none"> Procurement processes for program services and products results in adequate value and contractual security to meet program objectives and performance measures Program service providers and product suppliers have sufficient capacity to meet program objectives and performance measures over the long term Procured services and products meet partners' and clients' needs
Regulatory Limitations	<ul style="list-style-type: none"> Current and future legislation and regulations are sufficiently known to enable service delivery planning and contracts Legislation and regulations enable program services to meet program objectives and performance measures
Program Impact	<ul style="list-style-type: none"> Program outcomes and indicators are sufficiently measurable to understand program impact Program outcomes are achieved Program impact is defined holistically, and current and emerging gaps in program impact are reevaluated on a regular basis

Table 4.3

This system will be designed in full during Phase 3, and will likely retain a number of risk management, quality control, and performance measurement elements from Phases 1 and 2, as

well as additional elements to address emerging risk issues. The continuous monitoring and improvement system will be carried out by the program management team, and will work in

conjunction with the core risk management structures & processes defined in the first risk management strategy.

PROGRAM COURSE CORRECTION CHECKPOINTS AND RISK MITIGATION OPTIONS

The primary program course correction checkpoints discussed above allow the program management team to implement risk mitigations to improve service design and delivery should the program experience feasibility challenges or fall short on its performance expectations. Depending on the severity of risks identified through risk management and quality control activities, mitigation options may include the following:

- **Change program outputs** – revising program activities and deliverables may address a wide variety of risk, quality, and performance needs.
- **Reduce data platform functionality** – as a major source of program risk, the cost and technical complexity of the data platform may be need to scaled back in scope in order to achieve a minimum viable product (MVP) that is manageable while still achieving program outcomes.
- **Change performance indicators** – altering indicators may more effectively

or more practically measure progress toward program outcomes.

- **Change partners** – program partners and service providers may be unable to achieve program deliverables, share data, or participate as meaningfully as originally intended. Finding new partners may allow the program to better meet its outcomes.
- **Increase supply chain capacity** – a major source of program risk, service provider and product supplier capacity may be insufficient to meet the significant needs of the program. Issuing stable long-term contracts, requiring capacity building activities as part of contracts, collaborating with regional trade networks and training programs, and advocating for government policies that increase trade sector capacity may all be necessary to bolster the quality and capacity of program suppliers and service providers.
- **Improve communications** – as insufficient client uptake is a major program risk, altering communication strategies may be required. Improved communications may also be necessary to attract greater interest from funders and investors.
- **Increase funding** – as a town with a very limited ability to draw additional resources

from its tax base, Bridgewater lacks the means to put substantial program dollars on the table should funding levels be insufficient to meet program needs. Should program revisions described above yield insufficient risk reduction or quality improvement, or fail to build the necessary program capacity, additional funding sources may be needed to achieve program outcomes. This may result in program implementation delays.

- **Lobby for regulatory change** – municipalities are created and regulated by legislation. If any regulatory impediments or barriers are discovered, we may need to lobby to the provincial and federal governments for change, which can take time and may lead to delays in program delivery and or achievements.
- **Change outcomes** – as a last resort, program outcomes may need to be shifted to become more manageable, or abandoned altogether, if other mitigation options cannot allow the program to achieve the outcomes while also resolving program risks and quality issues.

Table 4.4 provides a preliminary assessment of the risk mitigation options that may address program risk and quality concerns at key course correction checkpoints.

Program Feasibility Assessment and Criteria

Risk Management Strategy		Course Correction Checkpoint(s)	Risk Mitigation Options								
			change program outputs	reduce data platform functionality	change indicators	change partners	increase supply chain capacity	improve communications	increase funding	lobby for regulatory change	change outcomes
Establish Core Risk Management Structures & Processes	Governance Structure & Commitments	October 2020 and February 2021				X					
	Management Structure & Capacity		X	X					X		X
	Evaluation Process		X		X						
	Communications System		X								
	Quality Control/Quality Assurance Process		X								
	System Gap Analysis Review Process		X		X	X	X	X	X	X	X
Confirm Feasibility of Program	Client Participation	October 2021 and October 2023	X					X	X		X
	Service Costs		X	X			X		X		X
	Service Capitalization		X					X	X		X
	Data Availability				X	X				X	
	Data Platform Setup		X	X					X		X
	Technical Solutions		X								X
	Supply Chain & Procurement		X				X				X
	Regulatory Limitations		X							X	X
	Program Impact		X		X				X		X
Establish Continuous Monitoring & Improvement System		To be determined	X	X	X	X	X	X	X	X	

Table 4.4

Project Continuation After Smart Cities Challenge

Continuation After Smart Cities Challenge
Smart Cities funding will create the prototype for the Energy Poverty Reduction Program and will ultimately demonstrate the feasibility

and value of this initiative continuing over the long term.

Our dedication to energy poverty reduction is evidenced in the **Performance Measurement** and **Financial chapters**, where program

considerations for years 6 through 10 are described. Commitment for Town Council's ongoing role in Bridgewater's energy future was proclaimed on January 8, 2018 with the formal adoption of the 32-year Community Energy Investment Plan.

ENERGY POVERTY REDUCTION THROUGH CONNECTED TECHNOLOGY PLATFORMS

From streamlining client intake, to enriching investment tools, to improving energy flows, connected technology plays a crucial role in all aspects of the Energy Poverty Reduction Program. A central feature of the program design is to empower households-at-risk by providing them with control over their home energy options through building upgrades that measure and monitor usage so that they can actively manage and control their energy costs.

Emerging connected technologies for household energy management built on the internet of things (IoT), big data and intelligent energy management systems are fundamentally changing the practices of households and their daily, monthly and annual energy budgets.

Evidence suggests that energy security is a significant stress factor for households-at-risk. There are cascading negative effects of missing payments on energy bills that result in financial impacts critically affecting all aspects of household life. The ability to optimize energy supply and consumption and to deliver energy reserves such as stored electrical power on demand, particularly in emergency situations, is an emerging requirement directly attributable to connected “smart” technologies and distributed energy resources.

Such technology includes smart thermostats for residential houses and smart thermal optimization for multiunit residential and municipal buildings as well as connected clean technology solutions for energy generation such as residential microgrids, virtual community loads and power plants and electricity micro market management.

At a high-level, this connected technology solution is based on three energy management “pillars” that are interoperable with one another and are all housed within an **energy resource planning platform**:

- An advanced **enterprise resource planning (ERP) system** for municipalities to ensure their housing and mobility assets are integrated with existing applications to support the households-at-risk in the community and will rely heavily on the diligent use and interoperability with the Energy Management Information System (EMIS) and Real Time Operations (RTO) system.
- an **energy management information system (EMIS)** focusing on housing energy management and community energy systems and solutions that will enable energy data monitoring and analytics. The EMIS will operationalize the efficiency of foundational and advanced applications related to energy

productivity for the households-at-risk, and broader municipal energy efficiency programs. The EMIS is fully connected to the ERP system to ensure fluidity of information without compromising accuracy.

- a **real time operations (RTO) system**, enabled through supervisory control and data acquisition (SCADA) and energy management system (EMS) solutions, that will leverage the value of the program assets and coordinate its controls in real time. The RTO system is a crucial component to minimizing energy use and maximizing efficiencies, and represents the final stage of the energy resource planning platform development once the municipal ERP system and EMIS are deployed and in operation.

These pillars will enhance the experience of households, sustain optimal levels of performance and reduce the costs of household energy use. The coordinated connected technology solutions focused on the buildings where households-at-risk live will make their homes highly efficient, more comfortable, healthier places to live. In addition to direct benefits, households will be empowered by having greater control of their energy use while encouraging household interactions and knowledge sharing.

ENTERPRISE RESOURCE PLANNING (ERP) SYSTEM

Enterprise resource planning (ERP) systems are packaged application software suites that support the common business processes, functions and data for the systems of record in an enterprise. The ERP is the system of record - the authoritative source of data that any stakeholder in an enterprise can reference to support their activities. The ERP achieves this by enabling the flow of information across the organization, in end-to-end business processes, through a comprehensive set of interconnected systems modules. Modules can be utilized in different combinations, presenting unique ERP options to meet different administrative, management, operational, analysis and reporting needs. This element of the data platform can be replicated and scaled according to local conditions.

Bridgewater's existing municipal ERP is TownSuite Municipal Software. The platform is used for finance, asset management, land management, human resources, eBilling, and customer service functions. This modified data platform would house the three pillar systems and will be operated in connection with the external Coordinated Access System data platform (HIFIS) as well as an external Financial Investment Vehicle dealing with traditional and community investors. An early conceptual diagram of the integration of

the municipal ERP, EMIS, and RTO functionality is provided in Diagram 6.1.

Dialogue with Townsuite has suggested that the Energy Poverty Reduction Program can be built onto this ERP but a full assessment of functionality options, development requirements, and timelines is needed to establish an agreement.

A one stop shop aided by technology for navigation of services would dramatically improve access to services for clients.

COMMUNITY SERVICES ORGANIZATION
REPRESENTATIVE

ENERGY MANAGEMENT INFORMATION SYSTEM (EMIS)

To provide community energy management support services and achieve the outcomes of the Energy Poverty Reduction Program, it will be necessary for the Town to collect and monitor energy data, and to manage energy information on behalf of participating program clients. This functionality is achieved through the addition of the energy management information system (EMIS). The EMIS will provide relevant information to households-at-risk, property owners, and municipal departments, enabling them to improve the energy performance of their assets. The EMIS will operationalize the municipality's energy

management objectives and provide an efficient means to audit and depict Energy Poverty Reduction Program outcomes.

The principal objectives of the EMIS proposed in the program is to support the municipality's energy management programs through:

- A comprehensive operations, sustainability and planning information system
- Visualizing and understanding the consumption of various types of energy through a set of energy dashboards and other analysis-based tools
- Quantifying energy use of individual home, buildings or processes
- Early detection of poorly performing buildings, systems or processes
- Reporting functions including auditing and the ability to identify performance trends

These functions, and their relationship to client homes and other community energy assets, are visualized in Diagram 6.2.

Features of the EMIS in the EPR system include a user focused web-based dashboard, the storage of data in a usable format, the calculation of effective targets for energy use, and comparison of actual consumption with these targets. Elements include sensors, energy meters, hardware and software, which may already exist as process and business performance monitoring systems.

Municipal Enterprise Resource Planning Platform

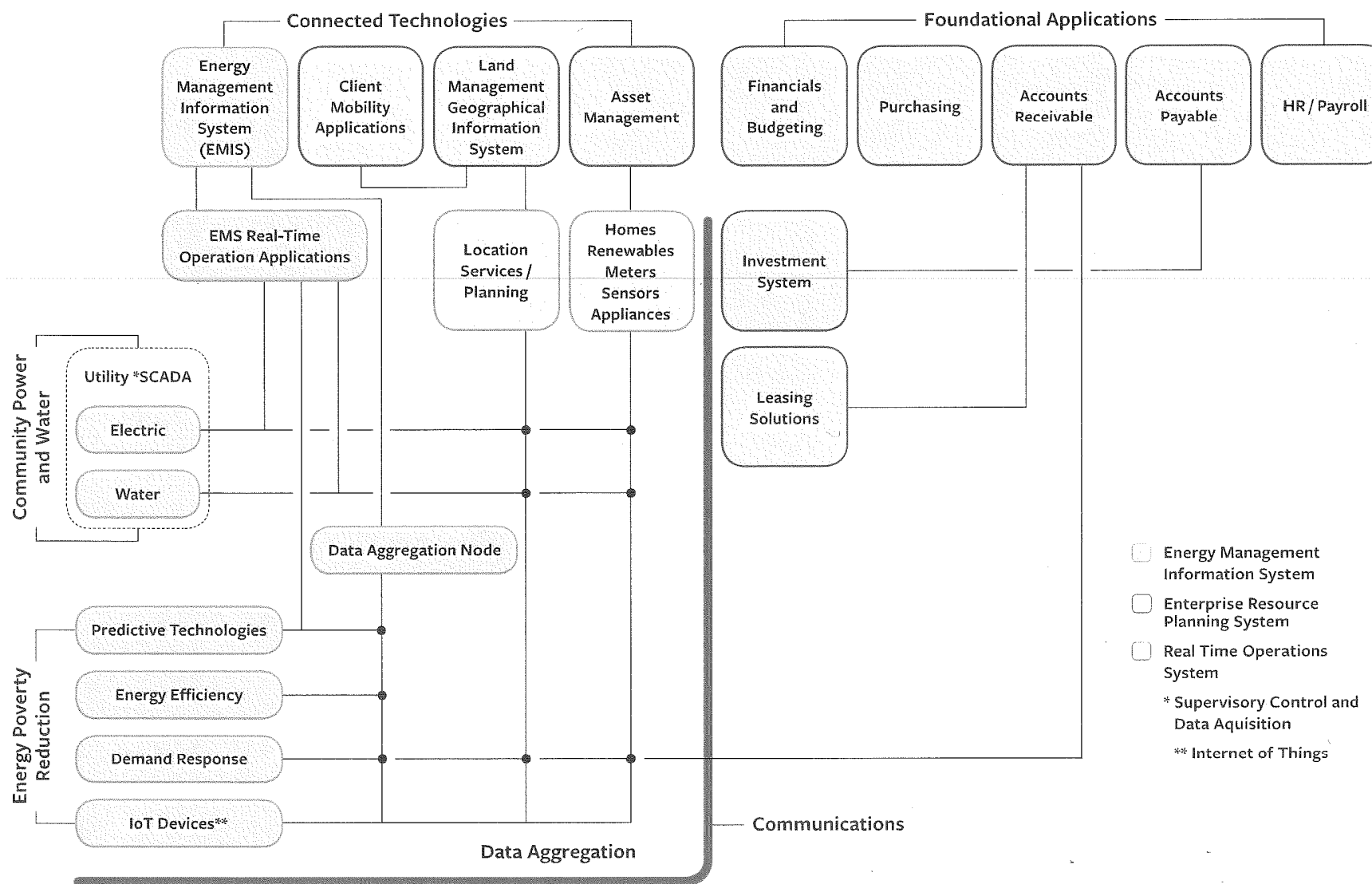


Diagram 6.1

Energy Management Information System Overview

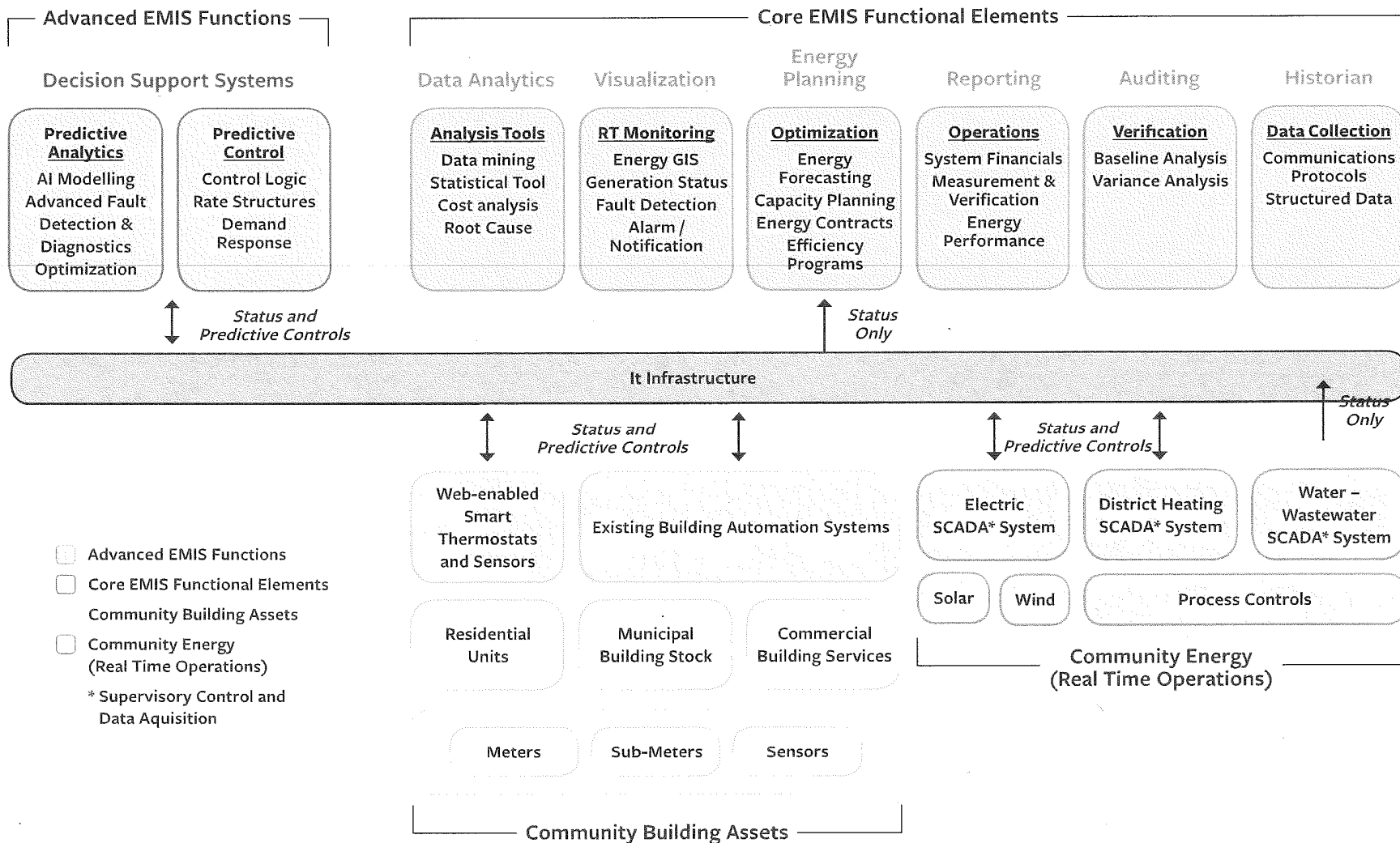


Diagram 6.2

EMIS functionality relies on the following three components:

- **Monitoring:** the EMIS coordinates the monitored data flow from all existing real estate and energy assets. It includes energy use, generation and storage for each of the project assets in energy units - expressed in kilowatt hours (kWh) and/or gigajoules (GJ) - as well as carbon footprint - expressed in tonnes. It also includes related energy costs and the costs of energy improvements. Finally, the EMIS also includes exterior environmental conditions such as ambient weather and interior environmental conditions such as room temperature and humidity. To visualize the project outputs and results, the EMIS intends to have a comprehensive dashboard as a key program tool. It also has an advanced historian to archive compressed data without overloading the server.
- **Descriptive Analytics:** a performance and auditing tool that analyzes historical data to define the reasons for past performance successes and/or failures.
- **Predictive/Prescriptive Analytics:** an advanced analytics component that leverages real time operations (RTO) controls of energy assets and utility resources. It combines real time energy data with external data on any

scale, which allows it to estimate the future energy consumption patterns of a single home, a multi-unit residential building, a neighbourhood energy system, or even the Energy Poverty Reduction Program or community as a whole. Prescriptive analytics goes beyond predicting future outcomes by suggesting beneficial energy management actions and showing the implications of each decision option.

REAL TIME OPERATIONS (RTO) SYSTEM

The real time operations (RTO) system leverages the value of the program assets and coordinates its controls in real time. The RTO system becomes active at the final stage of the program development when the core operations of its municipal enterprise resource planning system and energy management information system are deployed and in operation. The RTO system leverages the operations of the household and community energy assets in real time thus bringing additional hourly, daily, monthly and annual value to the community.

The two key parts of the RTO system are the supervisory control and data acquisition (SCADA) and the energy management system (EMS).

Supervisory Control and Data Acquisition
SCADA is a category of software application

programs and hardware devices for process control. These systems gather data in real time from remote locations in order to control equipment and conditions. SCADA is used in power plants, power distribution, as well as in oil and gas refining, telecommunications, transportation, and water and waste control.

SCADA systems allow the community to:

- control distributed energy resources and industrial processes locally or at remote locations
- monitor, gather, and process real-time data
- directly interact with devices such as sensors, heating ventilation and air conditions (HVAC) equipment, photovoltaic (PV) generators, and more through human-machine interface (HMI) software
- record events into a log file

SCADA systems offer important functionality for the Energy Poverty Reduction Program's more advanced operations as they help to maintain efficiency, process data for smarter decisions, and communicate system issues to help mitigate downtime.

Energy Management System

The main goals of sustainability in the grid revolve around economic operation, reliability, and environmental impact. One of the main advantages of the energy management system

(EMS) is that it can supply households with electricity and guarantee the reliability and intelligence of the power system.

The EMS can receive supervisory control signals based on requirements of the main grid. The system's operation policy depends on the ownership structure, connection status and market model.

The major reasons for the RTO-enabling energy management systems are as follows:

- accommodates intermittent distributed energy resources such as solar panels or energy storage in the grid
- reduces grid operation cost and emissions, thereby increasing energy efficiency
- improves grid stability, reliable fault ride-through and seamless mode transitions making the entire system more resilient

RTO - Energy Management Cycle

The RTO energy management cycle, presented in Diagram 6.3, illustrates the power of RTO functions when they work together to reduce energy poverty. This cycle forms the heart of the data and connected technology-driven energy performance improvement process, as communications between smart systems increase energy savings and energy generation. This enhances financial returns, enabling further investments in energy solutions.

CONNECTED TECHNOLOGY APPLICATIONS FOR ENERGY POVERTY REDUCTION

Connected energy technology applications are the practical on-the-ground solutions that work in unison with the data platforms described in the previous sections, and whose functions are enabled and enhanced through those platforms. These applications have a common purpose in reducing energy costs and increasing energy security for Bridgewater residents. They fall into 2 categories: connected energy efficiency solutions and connected clean energy solutions.

CONNECTED ENERGY EFFICIENCY SOLUTIONS

These are digital controls that use advanced analytics to generate energy savings:

- Smart Appliances: a smart appliance is connected to other devices or networks via wireless protocols such as Bluetooth, Wi-Fi, 3G, etc., that can operate to some extent interactively and autonomously. Smart appliances utilize modern computer and communications technology to make functions faster, cheaper and more energy-efficient.

Real-time Operations Energy Management Cycle

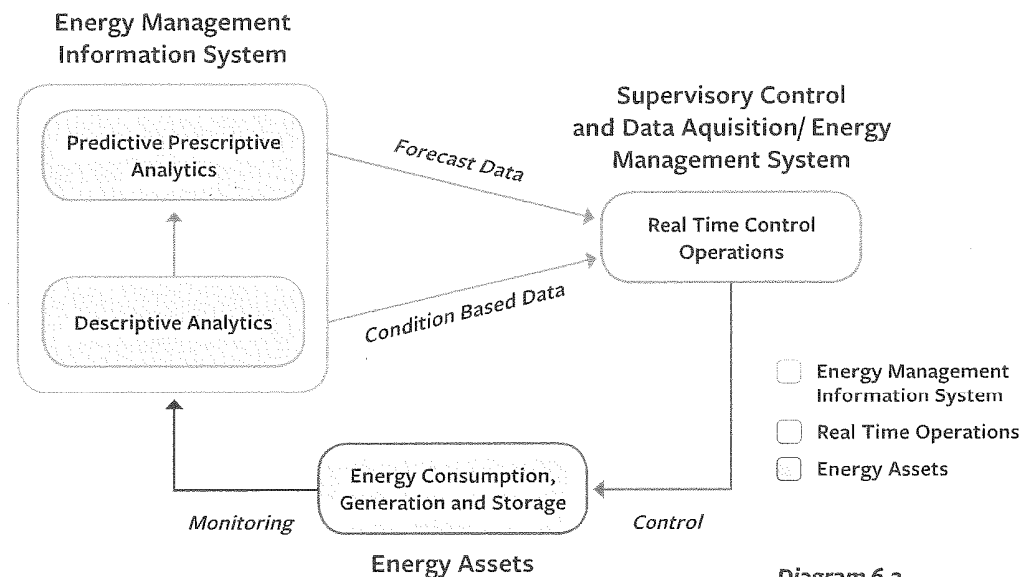


Diagram 6.3

- **Smart Thermostats and Smart Meters for Households:** smart thermostats and smart meters form a two-stage approach to the connected technology strategy. When coupled with advanced analytics and artificial intelligence, smart thermostats can be networked or clustered together in the community to participate in a broader energy management control system.
- **Smart Thermal Optimization:** smart thermal optimization for multi-unit residential buildings (MURBs) improves the efficiency of a building's energy use by anticipating and reacting to the changing weather conditions and requirements for heating and cooling in real time. Because weather and heating/cooling loads can vary significantly throughout the day, the impact of intelligent prediction is significant. This allows for reducing building heating and cooling energy costs by on average by 10% to 25% while improving tenants' thermal comfort.

CONNECTED CLEAN ENERGY SOLUTIONS

Electricity grids are experiencing a major transformation. Connected technologies improving energy efficiency of electrical loads (such as buildings and electric vehicles) and distributed energy resources (like solar PV and energy storage) make grid operations increasingly

complex. They also maximize the potential of clean, robust and flexible power grids in a low carbon future. The following connected clean energy solutions allow for the development of residential microgrids, which has a transformative impact on the power grid:

- **Residential Solar PV for Households:** residential solar PV systems can supply households-at-risk with clean, reliable and affordable electricity. When enabled with connected technology, they help coordinate the household's electricity use with the rooftop solar energy generation potential.
- **Combining Solar PV and Storage:** adding energy storage to a grid-connected PV system allows households-at-risk to store surplus solar energy for use later in the day, and provides a back-up power supply in the event of a power outage, thereby increasing energy security.
- **Predictive Energy Management (PEM) for the Community:** an emerging connected technology for reducing energy use for heating, ventilation and air conditioning (HVAC) of houses and buildings while enabling on-site solar energy generation and storage to provide auxiliary services to utilities in real time. It features coordinated supervisory predictive control of energy consumption,

on-site generation, storage and ancillary services for hosting utilities. PEM promises to be a flexible distribution system infrastructure that promotes increased levels of distributed renewable energy generation and enables improved control and automation on the electricity distribution grid. The PEM solution also provides flexibility within smart grid implementation to support future innovative applications, such as energy storage, and incorporate principles of modularity, scalability and extensibility into smart grid planning.

FEASIBILITY ASSESSMENT

The feasibility of the connected technology solutions discussed above, has been confirmed by the research done in this final application development stage. Town of Bridgewater and our Townsuite Municipal Software service provider have experience and expertise with advanced ERP systems. We can confirm that key features of the software are well known, understood and tested in the municipality.

The EMIS Planning Manual and Tool⁴ and the Canadian Industry Partnership for Energy Conservation (CIPEC), as well as EMIS practices and documentation have been reviewed by our technical team. The NRCan's EMIS approach is

⁴Developed and tested by Natural Resources Canada

based on innovative energy management and strong experience in the industry and makes the proposed EMIS completely feasible for the Town of Bridgewater, and a new standard for municipalities in Canada. The key innovation in the Energy Poverty Reduction Program is related to high resolution predictive analytics and its focus on improving lives of at risk households rather than those who can afford it.

The real time operations (RTO) system for the Town of Bridgewater is based on digital SCADA coupled with energy management systems (EMS). These systems are used in many industries throughout Canada and abroad, thereby strengthening the program's ability to be replicable and scalable. Based on a review carried out by the program's technical team the proposed digital SCADA/EMS combination is highly feasible for municipal utility applications.

OPEN TECHNOLOGY PRINCIPLES AND ARCHITECTURE

One of the major inhibitors to the adoption of connected technology in smart buildings and smart cities has been the lack of interoperability between different building systems. The program's connected technology solution ensures that all connected devices are speaking the same language, allowing them to 'talk' to each other and exchange information.

Adopting open protocols for houses and buildings, such as LonWorks or ASHRAE's open-source BACnet, allows all systems to communicate in a common protocol language. These common protocol languages define the arrangements under which devices and systems interact and communicate with each other.

One key advantage of open standards architecture and open protocol systems is that they enable the integration of new devices and internet of things (IoT) sensors and systems, as long as these devices also communicate using an open protocol language. A building that adopts open architecture standards is, therefore, effectively 'future-proofed' against vendor-generated proprietary constraints through the international standard EN62402 Obsolescence Management Safeguards. Thus, new functions and devices can be easily installed when enabling technologies are developed. This is further supported by our commitment to a local workforce that will be trained to implement and operate the technologies and systems going forward.

GENERATING INTELLECTUAL PROPERTY

The program will generate intellectual property (IP) for the community and the households-at-risk related to social and technical navigation, solutions, services, and related connected technology. The

program team recognises that free access to, and reuse of, these open licences is an essential part of making the program replicable to other communities and the Town is committed to sharing IP so long as privacy is not compromised.

The program will support the distribution of connected technology IP through:

- the release of IP for connected technology using open licences or other relevant instruments - while respecting intellectual property rights - so that no restrictions or charges are placed on the re-use of the information for non-commercial or commercial purposes, save for exceptional circumstances;
- the release of IP for connected technology using application programming interfaces (APIs), where appropriate, to ensure easy access to the most regularly updated and accessed connected technology; and
- encouraging innovative uses of our IP for connected technology through mentoring for its users nationally and internationally.

TECHNOLOGY IMPLEMENTATION PLAN

TECHNOLOGY IMPLEMENTATION TIMELINE

The timeline for the program's connected technology solution is described in Table 6.1.

STANDARDS AND GUIDELINES

Enterprise resource management, EMIS, SCADA/EMS, and connected technology guidelines and standards will be communicated to, coordinated with, and confirmed by connected technology partners, vendors and energy service providers to ensure full technology interoperability where necessary.

These standards and guidelines will also be discussed with and confirmed by the connected technology partners, vendors and energy service providers to ensure and guarantee the replicability and scalability of program during the Smart Cities Challenge timeframe, toward 2030, and beyond.

The following standards and guidelines have been thoroughly reviewed for consideration:

- Canadian Standard on Enterprise Resource Planning Systems
- ISO 50001 Energy Management Systems Standard
- The International Society of Automation - Standard ISA112 SCADA Systems
- International Electrotechnical Commission - IEC 61968 Standards Based Integration for Distribution Management System
- Natural Resources Canada - Energy Savings Toolbox
- Natural Resources Canada - Energy Management Information System

ROLES AND RESPONSIBILITIES OF TECHNOLOGY PARTNERS

The program team over the finalist proposal phase has built strong relationships with a variety of connected technology solution partners and has communicated accessibility and usability of the connected technology solutions to the households-at-risk, community energy owners/operators, energy service providers, investors, and other stakeholders

that support their uptake and acceptance in the program. This allows the program team to keep confident in the commitments of the partners during the program timeframe and towards the community's long-term objectives, to ensure the value to the households-at-risk and to the municipality, and to enable and train the municipal and community services' workforce. These partners are identified in the **Project Management chapter**.

Technology Implementation Plan: Energy Poverty Reduction Project Connected Technology Solution Timeline

Relationship to Smart Cities Challenge (SCC)	Within SCC Program & Funding			After SCC
Phase	1: Prototype Program Setup	2: Prototype Program Testing & Refinement	3: Final Program Activation	4: Program Maturity
Timeframe	2020-2022 (2 years)	2021-2024 (3 years)	2024-2025 (1 year)	2025-2030 (5 years)
Municipal Enterprise Resource Planning (ERP) System	Definition and Deployment of Modifications to Existing ERP Module	Definition and Deployment of EMIS Connectivity	Full Operation	Full Operation
Energy Management Information System (EMIS)	Definition and Deployment (houses)	Development and Deployment (MURB) RTO Monitoring/ Analytics Integration	Full Operation	Full Operation
Real Time Operations (RTO) System	Municipal RTO System Design	Deployment and Testing (houses, MURB and municipal buildings) Community Energy Integration	Full Operation	Full Operation

Table 6.1



The Town of Bridgewater proposes that the use of data and connected technology will catalyze energy related activities and outcomes. The data platforms selected will apply industry best practices to secure highly sensitive data collected from the Coordinated Access System, Municipal Enterprise Resource Planning (ERP) platform, Community Energy Systems, and Investment Systems. Further, it will defend against security breaches and protect personal information and privacy. Through continuing Energy Poverty Reduction Program efforts, Bridgewater will demonstrate to the community a commitment to responsibly managing data through its lifecycle with security and privacy considerations addressed.

ENERGY POVERTY REDUCTION DATA

DATA TYPES AND SOURCES

The Energy Poverty Reduction program expects to process data related to the following groups: household, property/asset, energy efficiency solutions and services, and investors.

TYPES AND METHODS OF DATA PROCESSING

The types and methods of data processing in the program include collection, generation, analysis, storage, and transmission of important data related to existing foundational (“legacy”) technologies and connected technologies.

- **Open data:** this is all data that is (a) non-privacy-restricted and non-confidential, (b) produced with either public or private resources and (c) made available without any restrictions on its usage or distribution. The municipal methodologies to manage open data are an open data portal and an open data policy.
- **Personal information, personal health information, and non-personal information** (as defined in *FOIPOP* act): this is data that is restricted and/or licensed and requires permission to be published or distributed; it includes data held privately because its value has not yet been identified. The municipal instruments to manage private data are data security and privacy policies, procedures, legislation and regulations, as well as authentication and access controls.
- **Commercial data:** these are all types of licensed data with a financial value for use and distribution. Commercial data may be produced with either public or private resources. The municipal instrument to manage commercial data are data security and privacy policies, procedures, legislation and regulations, contracts, licenses, data transaction platforms, and data policies and principles.

The program’s data platform concept also enables re-use and re-distribution of data, as well as derivative production, archiving, and preservation of data that reflects the entire data lifecycle in the Energy Poverty Reduction Program’s design. This includes individual data related to households-at-risk processed in the Coordinated Access System, energy poverty reduction solutions and services data as well as energy use, generation and storage and environmental data processed in the municipal enterprise resource planning (ERP) platform, investments and other related data processed by the Investment Systems.

DATA USE

Accurate and timely data disseminated through technologies described in the **Technology chapter** is a crucial component to all 5 systems defined in the VISION chapter for the following reasons:

- **Community Energy Systems:** Energy produced by these systems credit participating household energy use.
- **Housing Energy Management Systems:** Energy use from the household level down to the appliance level define energy savings and promote it through demand-side-management and analytics.



- **Coordinated Access Systems:** Data stored in the system streamlines Town and community service organization operations.
- **Mobility Improvement Systems:** Data shared through the above systems allow Town Planning and Operations to increase the ability of at-risk residents meet their mobility needs.
- **Investment Systems:** Energy savings and production earnings need to pass to investors in accordance to investment offerings.

DATA SECURITY

In alignment with the philosophy of “privacy by design”, the program has applied focused efforts to integrate data security and privacy considerations into the project design; this was particularly important for the households-at-risk but is valued by all stakeholders.

The Town of Bridgewater and/or contracted proponents will control and own all data collected using the program’s data platform including any modifications, improvements, and derivatives of such data. The data is personal and confidential and will not be disclosed or made available unless approved by the Town of Bridgewater. This data will be assessed using a Threat and Risk Assessment methodology prior to holding any live data.

IDENTIFICATION OF RISKS

Through the development of this application, we have been progressing with the identification of risks and the development of appropriate mitigating strategies for data management of the households at-risk of energy poverty. This includes completion of a preliminary Privacy Impact Assessment as part of this proposal.

ENERGY POVERTY REDUCTION DATA PLATFORM CONCEPT

The Energy Poverty Reduction data platform will harvest the data generated by energy efficiency and clean energy solutions for households-at-risk, inform decision-making of households, the municipality and the stakeholders, and will advance and improve the performance and application of the connected technologies used. The Energy Poverty Reduction Program will also leverage its resources to build and maintain in-house analytics. The Town will develop an Energy Management Information System (EMIS) to collect, process and analyze the data provided.

STRUCTURE

The Town of Bridgewater sees the program’s data platform as a leading smart city platform ensuring interoperability of/integration with existing federal, provincial and community data platforms and has identified high quality candidates for these functions.

We understand that data and connected technologies can tremendously benefit cities or small communities enabling the discovery and more in-depth understanding of the needs of the local population

– DALHOUSIE UNIVERSITY PROFESSOR

The data platform will include three major components: Coordinated Access System, Municipal Enterprise Resource Planning (ERP) platform and Investment Platforms.

The Coordinated Access system is planned to allow community organizations and service providers to collect and manage personal and personal health information on clients who are housing-insecure or homeless. This data platform will reside outside of the Town’s municipal services and be used by community partners for the Coordinated Access System that would support households at risk.

The connected technology solutions enabled through the ERP platform will coordinate the households and the municipality’s real estate and energy assets and energy solutions. This will be a split internally- and externally-accessed platform providing all necessary analytics and controls data for real time and planning/reporting operations.

There will be an internal and external investment platform orchestrated by an Investment Navigator. Community and traditional investment data will be housed in a secure database, abiding to federal and provincial rules and regulations hosted by an organization procured by the town.

FUNCTIONALITY

The data platform provide the following functions:

- **Acquisition/Interconnection:** These provide data capture mechanisms from the collection systems.
- **Data/Knowledge:** These support data processing, adding value and transforming information into knowledge.
- **Interfacing:** These enable access to information at different levels.
- **Service support:** These coordinate all the possible services involved in each action developed out of interoperability functions.
- **Security and management:** These provide horizontal functionalities such as audits, monitoring and security.

Two key interfaces allow for communication between the above group of functions:

- **Acquisition:** This interface with the program data platform enables information collection from the external elements.

- **Interoperability:** This interface with the program data platform enables communication with external data providers and the third-party computation systems.

INTEROPERABILITY WITH CONNECTED TECHNOLOGY SOLUTIONS

DATA SERVICE PLATFORMS ENABLED BY CONNECTED TECHNOLOGIES

The Energy Poverty Reduction Program data platform will have access to different information sources, share resources, analyse capacity and coordinate services, usually based on predictive analysis. The concept referred to as “horizontality” is to be applied to the program. Through “horizontality” information from various sources interact with one another in order to provide streamlined services and operations.

INTEROPERABILITY WITH DATA SERVICE PLATFORMS

Data service platforms enabled with connected technologies provide various services in specific areas. These service platforms (known as “verticals”) are provided by supervisory control and data acquisition (SCADA) or more complex platforms. Most of the time these platforms are independent and do not share resources, or they do so sparingly.

The introduction of the program’s data platform will enable the integration and optimization of vertical service platforms and facilitate the exchange of information and resources between these vertical service platforms. On one hand, the resources and systems used by the vertical platforms supporting the same functions can be pooled and on the other hand, the information that is stored and processed by one vertical platform can be used by the others, enabling the generation of cheaper, more valuable and more complex services.

Vertical platforms will be integrated with the program’s data platform in two ways. They can be deployed inside the program or can be integrated using open interfaces, in which case the processes and resources required by the vertical platform could not be deployed inside the Energy Poverty Reduction program.

Open interfaces are required to interconnect the program’s data platform with other municipal platforms enabling other systems to interoperate with the program more efficiently. In the integration process some resources, such as data source, can be shared. Since the services can access more data sources, it is possible to create new services and improve those that already exist. Predictive analysis is also facilitated, because more data sources are accessible.



The program's data platform could interoperate with external providers' platforms, and its interfaces are required to be adapted. The adaptation of these interfaces will depend on the type of platform.

DATA PLATFORM SECURITY

The Town of Bridgewater will control and own all data collected by the Energy Poverty Reduction Program data platform including any modifications, improvements, and derivatives of such data. The data is personal and confidential, and thus will not be disclosed or made available unless approved by the Town of Bridgewater. At all times the program's data platform and related technologies must be compliant with all applicable privacy legislation provincially. Cyber management is examined in further detail in the preliminary Privacy Impact Assessment (PIA).

NETWORK SECURITY

The network provider will take a number of steps to ensure the security of their networks. A dedicated team of security professionals will focus on network security and security governance. This will include, but is not limited to, multiple levels of security such as service security authentication mechanisms, secure access to client locations/sites, change control validations/processes/policies and network monitoring tools/applications/audits. This will be confirmed through the completion of a Threat and Risk

Assessment. The Office of the Information and Privacy Commissioner for Nova Scotia (OIPCNS) has outlined the importance of designating a Chief Security Officer who is responsible for security: IT system maintenance and security, security awareness, ensuring digital and physical security, etc. for both the program and municipality. The Town will act on this recommendation as part of the detailed program design.

RESILIENCY

The Energy Poverty Reduction data platform will ensure the ongoing operation of services according to established service level agreements. These services may require availability 24x7 and a service level of over 99.9% annually. Providers may offer solutions complying with these requirements.

CYBER THREATS MANAGEMENT

Cyber threats to the program's data platform will be addressed through cybersecurity scanning and tests in the Platform, for threats such as malware, phishing, spear phishing, lost or stolen devices, distributed denial of service.

OPEN DATA AND BIG DATA STRATEGIES

THE OPEN COMMUNITY

The municipality's need for transparency and accountability has always been seen as

fundamental by the Town of Bridgewater. The community is very supportive of the Open Government Partnership (OGP) created in 2011 and having Canada among its 75-member countries.

OPEN DATA FOR THE ENERGY POVERTY REDUCTION PROGRAM

The Town will make certain data types open to public stakeholders through online portals. This will come at no cost to the user and a standard license to allow re-use and distribution may apply.

Municipal data, like any data collected by public institutions, are subject to privacy legislation for personal information and other restrictions which limit it being made public (e.g. intellectual property).

The program defines the data spectrum including closed data (internal access), shared data (with group-based access) and open data (with public access and open to everyone).

The program data management addresses important Open Data strategy development related to high resolution environmental data and data analytics, public housing and mobility data and data analytics as well as public data on energy efficiency and clean energy solutions and services for the Bridgewater community.



COMMITTING TO G8 OPEN DATA CHARTER: BEST PRACTICES

The EPR project is committed to all 5 Open Data Charter⁵ best practice principles, in accordance with Federal and Provincial legislation and regulations.

BIG DATA STRATEGIES

Big data that is collected through the Energy Poverty Reduction Program will allow municipal policies makers to make decisions based on real information, enabling them to further improve energy performance, related energy use, mobility and transportation decisions, etc.

PERSONAL DATA AND INFORMATION PRIVACY

PERSONAL INFORMATION FOR ENERGY POVERTY REDUCTION

The Smart Cities Challenge approach uses real-time and actionable data to inform the operation of community-wide systems and services. The Energy Poverty Reduction Program demonstrates the inclusion of measures to protect personal information and privacy and respects the fair information principles.

Personal information is data about an “identifiable individual.” It is information that, on its own or

combined with other pieces of data, can be used to identify a specific individual. In some circumstances, information that may appear to be non-identifiable may still qualify as personal information if there is a risk of re-identification. See Preliminary PIA for *FOI/POP* act considerations.

Health information in the Energy Poverty Reduction Program can include, items as defined by Nova Scotia’s PHIA act. See Preliminary PIA for PHIA act considerations.

The program’s information will be combined and analyzed with data from different sources and could become identifiable personal information. To mitigate this risk, the program team will seek to de-identify personal information at the earliest opportunity, and always pursue the least privacy-invasive options wherever possible. See the Preliminary PIA for further details surrounding data consent, data sharing opt-out options, server locations, data ownership and governance, safeguards and transparency.

HOMELESS INDIVIDUALS AND FAMILIES INFORMATION SYSTEM (HIFIS)

The Homeless Individuals and Families Information System (HIFIS) software is owned by Service Canada which it shares nationally with communities to assist services delivery agencies track and report on their efforts, ultimately

supporting vulnerable households; those who are homeless or at risk of being homeless. The HIFIS system is undergoing upgrades to a cloud-based system allowing for fluid information sharing between services organizations. Individuals seeking homeless related services, through local service providers, no longer have to repeat their stories multiple-times to each party, as their HIFIS profile is now shared amongst services organizations granted the client provides consent. Two service organizations within the Town currently use HIFIS (Freeman House and Second Story Women’s Centre), and it’s expected this number will grow as the newest iteration rolls out.

Through attending a HIFIS training session, correspondence with community service organizations, dialogue with the Affordable Housing Association of Nova Scotia (AHANS), and examining research that suggests energy poverty contributes to housing insecurity, the Town has identified HIFIS as being a key component to the Energy Poverty Reduction program. One has the ability within HIFIS to create unique fields and surveys, for specific programs, which can be partitioned off from other community service programs and organizations at the household’s request. The Town will create its own survey and fields for the purposes of tracking program outcome indicators.

⁵ G8 Open Data Charter: Technical Annex
<https://opendatacharter.net/g8-open-data-charter/>



Energy meters on the side of an apartment building.

This data platform would reside outside of the Town's municipal services and an agreement would need to be established between the municipality (or to be determined service organization) and AHANS, who has a contract with Service Canada, or Service Canada itself. This would allow our household indicators to be stored on AHANS's HIFISNS Network host (Canada Web Hosting) which meets Federal Government security standards.

The Office of the Information and Privacy Commissioner for Nova Scotia (OIPCNS) has outlined their concerns related to HIFIS. These concerns include creating a more robust view of a household through information gathered by the program and potentially Federal government access to this information. The Town will address these concerns through a Privacy Impact Assessment (PIA) as outlined in the Preliminary PIA.

PRELIMINARY PRIVACY IMPACT ASSESSMENT

To support the selection and design of a comprehensive data management system, the Town of Bridgewater developed a preliminary privacy impact assessment (PIA) for the Energy Poverty Reduction Program. The PIA includes a map depicting all of the program's anticipated data flows for the key project activities: Intake, Service Delivery, and Monitoring and Analytics and qualified their associated security and privacy risks. While developing the preliminary PIA the Town of Bridgewater staff actively consulted with the Office of the Information and Privacy Commissioner (OIPC) of Nova Scotia to ensure that the program design conforms with all applicable privacy laws and best practices. Project staff also worked with the Town's Finance Department and the Municipal Joint Services Board (MJSB – IT Services) to ensure that project IT needs can be met and are compatible with existing services and infrastructures.

Through the PIA, the Town of Bridgewater demonstrates that relevant privacy authorities were consulted, and their guidance was considered during the program and application development. The PIA reviews and supports the Energy Poverty Reduction Program's compliance with relevant municipal, provincial/territorial, and federal privacy regimes.

ENGAGEMENT ACTIVITIES UNDERTAKEN TO DATE

INITIAL APPLICATION PHASE:

JANUARY – APRIL 2018

We looked to the public to teach us about energy poverty, their experiences, core concerns, and suggestions on how a Town strategy could reduce energy poverty. Feedback from over 200 residents reinforced public support for reducing energy poverty. The submission of the Town's initial application to Smart Cities Challenge, and its eventual selection as a Finalist, was met by enthusiastic support from the community and our stakeholders, a support that has continued to grow continuously over the course of the Final Application development phase.

FINAL APPLICATION PHASE:

JUNE 2018 – MARCH 2019

We produced a comprehensive Community Engagement Plan that identified the project's primary stakeholders and identified the outcomes of the program that were relevant for each group. For each group, it planned a schedule of engagement activities, complete with desired engagement outcomes. The Community Engagement Plan was implemented through the following activities:

1. Energy Poverty Research Program

This program sought to document and better

understand the lived experience of energy poverty. It included the following:

Interviews: 20 interviews were conducted, consisting of 12 women and 8 men with a broad age distribution of 18 – 65 and over; 75% of interviewees were renters, 10% lived in affordable housing, and 15% owned their home; and 12 participants received income assistance and 8 did not.

Focus Groups: 57 individuals participated in the focus groups, consisting of 38 females, 16 males, and 2 transgendered females; 45 renters and 11 owners; and 50% of participants were on income assistance.

Key Findings:

- Many individuals living in energy poverty have developed energy management strategies for dealing with their energy burden;
- Several demographics are more at-risk for energy poverty including: single mothers, African Nova Scotians, seniors, and those with health conditions and disabilities;
- Energy poverty has a severe impact on a household's ability to spend on other essential goods and services, forcing trade-off decisions on food, health, and entertainment;
- Residents are highly supportive of long-

term community-based solutions which provide greater access to quality housing, affordable energy, and greater mobility options.

The research program provided the opportunity to build early relationships with our eventual clients and include our learning into the program design. To promote involvement, the Town offered an honorarium of \$20/hour for program participants.

2. Engagement of Community Stakeholders

Workshops. A series of 8 workshops involved open discussion on almost every component of our application. Over 30 organizations have been represented at workshops, with over 140 representatives in attendance. Some of the key learning outcomes that were achieved through the workshops include:

- Service organizations with a diverse range of mandates identified energy poverty as one of their clients' key challenges and a core service priority;
- Service organizations endorsed addressing the systematic causes of energy poverty;
- Data and connected technology solutions were identified as essential to increasing collaboration and efficiency of resource allocation for service organizations.

Interviews: We undertook 15 one-hour interviews with representatives of partner organizations. From these interviews we learned that:

- Partners have insufficient resources to address the basic energy, housing, and transportation needs of their clients;
- Partners are supportive of a coordinated access system for their clients;
- Spending on energy related services constitutes a large portion of many organization's budgets;
- To reduce costs, there needs to be a shift from spending on emergency services to preventative services.

3. Engagement of the Public at Large

The Town involved a substantial number of individuals by utilizing a range of in-person and online engagement activities.

Youth Video Documentary: The Town worked with the HeartWood Center for Community Youth Development, the Department of Community Services, and Picnic Studios to bring together a video team comprised of 5 youth-at-risk from Bridgewater and area. The youth team created a video documentary called *Living in Energy Poverty* which was premiered at an Open House on January 17, 2019. Parts of the footage was incorporated into the Town's 5-minute Smart Cities Challenge video pitch.

The documentary has received regional recognition for how it captured the lived experience of energy poverty and was featured in a CBC Nova Scotia article about energy poverty in Bridgewater.

Community-Wide Paper Survey: A paper survey yielded a total of 585 responses, representing 15% of Bridgewater households. Important program information received through the survey included:

- 38.5% of respondents said that they had difficulty affording energy costs and spent more than 10% of their after-tax income on energy and transportation costs. This indicator will act as a baseline to track our energy poverty rate as part of program performance and measurement.
- Responses were tracked by housing type and neighbourhood, which informed the mix of housing ages, forms, and heating systems used to inform this proposal's financial outcomes and energy analysis.

Thematic Surveys: We received a total of 278 responses from 4 different thematic surveys, covering housing; transportation; health; finances; and employment and training. Some of the key findings from the surveys include:

- 74% of respondents stated that they had faced difficulty paying rent, energy bills, or transportation in the last five years;

- Middle income households can also suffer from energy poverty.

Social Media: Town staff routinely engage residents using social media to answer questions, and provide further information related to the Energize Bridgewater and Smart Cities Challenge programs.

Video and Image Media: 10 videos were produced to document the Town's workshops with partners, engagement with residents, and illustrated the Town's application. This content was shared over the Energize Bridgewater and Town of Bridgewater social media pages. An interpretive exhibit was created that featured quotes shared by participants from interviews and focus groups. The exhibit has been displayed in four locations across town to initiate further engagement with the community on energy poverty.

Open Houses: On January 17, an open house was held for the public at large that premiered the youth video documentary described above. On March 29, a final open house will explain the community's final application to the public.

ENGAGEMENT PRINCIPLES GOING FORWARD

The design of the community engagement approach for the Energy Poverty Reduction Program is founded on 5 principles:

1. Consideration of full-spectrum needs: engagement efforts will be designed based on an integrated understanding of the needs and aspirations of program clients and partners. This ensures that their voice matters, and that emerging risks and challenges are addressed in a timely fashion. Design and evaluation of engagement efforts will consistently refer to the broad set of desired program outcomes.

2. Inclusion and accessibility: these principles will continue to inform the design of the program. Ongoing efforts to understand the needs of clients, use a trauma-informed lens for service design and delivery, evaluate which voices are not being heard, and challenge assumptions and stereotypes, will help meet inclusion goals. The accessibility of the program will also constitute an important evaluation criterion for program partners, in particular the Coordinated Access System and the Housing Energy Improvement System.

3. Empowerment: the central purpose of the program is to enhance energy management capability for program clients and throughout the community. This principle extends toward ensuring that program clients have a say in program design, delivery, and evaluation. It is operationalized

through engagement structures such as the Client Advisory Circle and the role of the Ombudsperson, continuous feedback from clients and partners, and the use of connected technologies to better access information and communicate needs. For program partners, it means participation in the program governance structure, and through ongoing feedback and evaluation processes.

4. Consent: obtaining informed consent to receive program services and to share data is critical for fostering trust and encouraging participation. The Town and its service delivery partners must ensure that clients are appropriately informed about the services that they will be receiving, as well as their rights and responsibilities as clients.

5. Navigation support: the provision of extensive navigation services is necessary to help clients overcome difficulty in navigating community and government support systems and bureaucracies. The Household Navigator, working through the Coordinated Access System embodies this principle for households-at-risk, as do the Technical Navigator and Investment Navigator roles for property owners and investors, respectively.

PROGRAM CLIENTS, STAKEHOLDERS, AND ENGAGEMENT TOOLS

Energy Poverty Reduction Program stakeholders are described below, along with engagement objectives and tools that have been tailored to their needs:

Households at Risk of Energy Poverty

Currently estimated at 38.5% of Bridgewater's population, these residents are a primary client of the program. Engagement objectives and tools:

1. Ensure that clients' voices and needs are heard as part of the program design and evaluation.

Engagement activities include representation on the Client Advisory Circle, active participation in program design through focus groups, interviews, surveys, and service testing, and through feedback from program partners who serve these clients.

2. Connect clients to the community and energy services they require.

Engagement activities will be driven by the Coordinated Access System and its Household Navigators. It will provide high quality, accessible services that are designed specifically with an eye to serving the broad range of needs and levels of urgency experienced by households-at-risk. In delivering coordinated access services,

clients will be educated on their options, rights and responsibilities in sharing their personal data. A Communications Strategy will be developed to attract clients.

- 3. Empower clients to better manage their energy systems.** Engagement activities will include the provision of energy management services for clients who are also homeowners, and referral of landlords to these services if the clients are renters. A home energy ‘dashboard’ will be provided to clients, with an ever-growing set of energy management solutions as those become available from the evolving Energy Management Information System and community energy systems. Clients receive energy management training to build their skills and knowledge, and to share with other clients those energy management practices that they have already developed and refined.

Property Owners

Bridgewater property owners whose properties are inhabited by households-at-risk of energy poverty are a primary client of the program. Engagement objectives and tools:

- 1. Ensure that clients’ voices and needs are heard as part of the program design and evaluation.** Engagement activities are the same as for households-at-risk.

- 2. Connect clients to the technical solutions they require.** Engagement activities will be driven by the Housing Energy Management System and its Technical Navigators. High quality, accessible services will be provided, with attention to the needs of landlords to help them overcome split incentive issues that often complicate energy improvement efforts. Clients will be educated on their options, rights and responsibilities in sharing their personal and property data. A Communications Strategy will be developed to attract program clients.

- 3. Empower clients to better manage their energy systems.** Engagement activities are the same as for households-at-risk.

Investors

Program capitalization will be achieved by attracting and retaining investments from specialized funders, as well as traditional and community investors. Engagement objectives and tools:

- 1. Ensure that investors’ voices and needs are heard as part of the program design and evaluation.** Engagement activities will centre around direct outreach during the program design and prototyping phases to ensure that program

outputs, outcomes, and financial returns represent adequate value for investment.

- 2. Achieve investments for the program.**

Engagement activities will centre around continuous outreach, marketing, and reporting to investors. Investors will learn about investment opportunities and their benefits, including the ability to leverage further funding, and to reduce long-term costs to these agencies through efficiency gains that come from coordinated housing improvements and community services provision. Traditional and community investors require detailed financing prospectus documents to attract their investment interest. Maintaining investor relationships is a key activity for the Investment Navigator and the Financial Investment Vehicle.

Service Delivery Partners

Program governance and service delivery will involve multiple levels of relationships with project partners and service providers. Engagement objectives and tools:

- 1. Develop a strong and committed partner network.** Engagement activities will involve building on existing relationships with essential program partners such as Efficiency Nova Scotia,

TownSuite Municipal Software, the South Shore Housing Action Coalition, Family Services of Western Nova Scotia, and others. Stakeholders will continue to advise on goals, metrics, data needs and benefits, use cases for data, budget, policy, operations, end-user needs, and program governance. Partners will be invited to apply to the Energy Poverty Reduction Program Steering Committee and Technical Advisory Committee to support the program's governance and advisory functions as described in the **Governance chapter**. Broad participation from community partners will be required to design the Coordinated Access System and to provide access points throughout the community. Led by the Program Coordinator, ongoing evaluation processes with partners will ensure continued engagement.

2. Maintain program quality and manage risks. Once program services have started, engagement activities will revolve around quality control and evaluation. All service delivery partners will be involved in the processes described in the **Project Management chapter**. This will extend to engagement with regional trade networks and supply chain capacity building.

Acadia First Nation

The Town of Bridgewater is in Kespukwîtk (Land Ends) on the unceded territory of the Mi'kmaw. Acadia First Nation (AFN) is the Mi'kmaw Nation within whose territory Bridgewater is located. Guided by the Community Engagement Plan, Bridgewater Town Council issued a formal expression of interest in 2018 to initiate government-to-government relations with AFN. The Town will **continue to develop this relationship**. Engagement activities will focus on cultural exchange, knowledge transfer, and the identification of partnership opportunities for energy-related initiatives that achieve mutually beneficial outcomes.

Senior Government and Other Communities

The Province of Nova Scotia and the Government of Canada have jurisdiction over legislation, regulations, policies, and programs that influence energy poverty risk factors for Bridgewater residents as well as for other communities. Engagement objectives and tools:

1. Inspire positive change across the Province and the country. Engagement activities will be centred on knowledge transfer and advocacy, so that energy poverty solutions developed in Bridgewater can achieve broader systems-level impact. Participation in the Smart Cities Challenges offers a powerful platform to do so.

2. Inspire energy poverty reduction actions in other communities.

Engagement activities will be centred on knowledge transfer. The Town will also use its regional networks and its membership in the Federation of Canadian Municipalities to achieve these ends.

General public

The community of Bridgewater at large, plus surrounding communities, will have ongoing interest in the program, and receive direct and indirect benefits from it. Engagement objectives:

1. Openly communicate program outcomes and benefits to the community.
2. Receive feedback on broader program benefits and outcomes.

MONITORING AND EVALUATION

The evaluation processes described in the **Performance Measurement chapter**, and the quality control and risk management processes described in the **Project Management chapter** will ensure that that outputs and outcomes associated with stakeholder engagement are monitored and evaluated on an ongoing basis. Program risks associated with engagement efforts are identified in the **Project Management chapter**.



IMPLEMENTATION PHASE REQUIREMENTS

MODERN TREATY OBLIGATIONS AND DUTY TO CONSULT WITH INDIGENOUS GROUPS

The Town of Bridgewater received confirmation through the Nova Scotia Office of Aboriginal Affairs that The Town is not required to consult with the First Nations in this province at the application stage of this project. The Town has consulted with Acadia First Nations based on Duty to Consult principles and as a good governance practice in accordance with the *Government of Nova Scotia Policy and Guidelines: Consultation with the Mi'kmaq of Nova Scotia*. The Town intends to undertake further consultation and build a partnership with Acadia First Nations regardless of the outcome of the application.

COMMUNITY EMPLOYMENT BENEFIT

The Town will be participating in the Community Employment Benefit Initiative. In order to do so, the Town will create a Community Employment Benefit policy to guide training, hiring, and procurement processes. The policy will result in a revision to our existing HR and Procurement Policies which do not yet include the principles of the Community Employment Benefit Initiative.

The Town will identify employment and procurement opportunities for three groups targeted by the initiative soon after the funding

decision is made. Through feedback we received in consultation of residents and partner organizations, the Town is already aware of several groups who could be identified for employment and procurement opportunities.

No one individual can be held accountable, but we can hold a community accountable.

—RESIDENT, TOWN OF BRIDGEWATER

The Town will adhere to the following plan in the selection of the employment and procurement opportunities:

1. The Town will consult with community partners to come to a consensus on the needs of employment and procurement opportunities for the inclusion of those who are traditionally underrepresented.
2. A needs assessment will be undertaken to identify employment opportunities.
3. The town will develop partnerships for resident recruitment through partner organizations.
4. Measurable indicators will be created to monitor progress.
5. Dispute resolution mechanisms will be drafted.
6. A reporting framework will be created.

CLIMATE LENS ASSESSMENT

The Town of Bridgewater is not required to

undertake a Climate Lens Assessment for the purposes of this application because we are in the \$5 million prize category. Even so, a key focus of the Town's application is on a reduction in GHG emissions. The Town quantified and set targets for GHG emissions reductions of 80% by 2050 in our 2018 Community Energy Investment Plan (CEIP). The Plan provides guidance for many climate mitigating project outcomes and details their climate impacts. The Town was one of only two communities in Atlantic Canada who submitted to the Carbon Disclosure Project (CDP) in 2018 and received an overall score of B, higher than the regional and global averages.



Community stakeholders watching a presentation at a Smart Cities Challenge workshop.



IMPLEMENTATION PHASE REQUIREMENTS

The project will draw on a wide array of partners and stakeholders who are working at the ground level on poverty reduction, transportation, and employment to identify opportunities for shared solutions.

– COMMUNITY SERVICES ORGANIZATION REPRESENTATIVE

OTHER APPLICABLE LAWS, REGULATIONS AND POLICIES

FEDERAL POLICY

- **Reaching Home: Canada's Homelessness Strategy** Bridgewater's proposed outcomes for the provision of affordable, secure housing is closely aligned with *Canada's Homelessness Strategy*. The Town will utilize Employment and Social Development Canada's Homeless Individuals and Families Information System (HIFIS) software as the data platform for our Coordinated Access system.
- **A Place to Call Home: Canada's National Housing Strategy (2018)** Our project aligns with the Government of Canada's National Housing Strategy with activities aimed at providing preventative actions for reducing homelessness, helping households to find suitable housing and ensuring housing remains affordable.

- **Opportunity for All: Canada's First Poverty Reduction Strategy (2017)** Our project aligns with the Government of Canada's commitment to reducing poverty by 50% by 2030. In many ways, the Town's Energy Poverty Reduction Program mirrors the approach being taken nationally but with a more specific focus on the energy element of poverty and a course of action that is meaningful, measurable and monitored.

PROVINCIAL LEGISLATION AND POLICY

- **Municipal Government Act** As a municipal unit will operate in accordance with legislation laid out in the Nova Scotia Municipal Government Act and related regulations.
- **Housing Act** The Town of Bridgewater will develop policies in accordance with the legislation.
- **Building Code Act** The Housing Energy Management System within the Energy Poverty Reduction Program will adhere, at minimum, to the requirements set out in the Act and related regulations.
- **Access by Design 2030 Achieving an Accessible Nova Scotia:** The Town is aligned with the Act's acknowledgement

that accessibility is a human right and through our Mobility Improvement System.

- **The 2005 Environmental Goals and Sustainable Prosperity Act (EGSPA)** Our proposal aligns with goals on sustainable prosperity, such as emission reduction, energy efficiency programs, climate change adaptation and improving the Province's environment and economy for future generations.
- **Nova Scotia's Electricity Plan 2015-2040** Our conforms with key themes of Nova Scotia's Electricity Plan to ensure stable electricity prices for residents, create innovative energy systems that promote customer control, integrate systems, and increase the value of renewable energy resources in home heating and transportation.
- **A Housing Strategy for Nova Scotia (2013)** Our aligns with and supports the Province of Nova Scotia's goal to ensure that Nova Scotians can find the housing choice that's right for them and their families, at a price they can afford, in a healthy, vibrant community that offers the services, supports and opportunities they need.

INTRODUCTION

For Bridgewater to lift 20% of its residents out of energy poverty in 10 years, \$89.8 million dollars needs to be invested into the community. The \$5 million prize of the Smart Cities Challenge is just a fraction of the overall cost but is the catalyst that will enable the Town to make this bold step forward to ensure no family is left behind. It is also an investment in the shift required to achieve a clean, efficient, affordable and secure energy future for our community.

By the end of the Smart Cities Challenge program in 2025, our community will have been the recipient of \$45.7 million worth of investments in housing, transportation, community energy systems, and community services. As Table 9.1 indicates, that will increase by another \$44.1 million over the next 5 years as the program matures through years 6-10. The large majority of these investments relate

to 'hard' costs and come with financial returns (labeled "with ROI" in the tables and charts in this chapter). By undertaking strategic de-risking activities, and leveraging the power of connected technologies such as home energy monitoring systems, Bridgewater will be able to bundle these investment opportunities and make them attractive to a diverse group of investors. Pooled capital implements the energy poverty reduction solutions described in the previous chapters, which systematically lifts Bridgewater residents out of energy poverty. These capitalization activities are explained in detail later in this chapter.

To deliver on these opportunities, the Energy Poverty Reduction Program will incur \$5.42 million in core operating costs over the first 5 years. These costs consist of program development, operations, and administration. They can be offset by the \$5 million Smart Cities Challenge grant, which acts as a catalyst that allows the community

Through our proposed solutions, we will make sure those among us who are most vulnerable and least able to afford the transition, are the first ones we help across the threshold. Those residents have the most to lose and through the betterment of their lives, our community has everything to gain. - MAYOR MITCHELL

to leverage the additional \$40.3 million over that same timeframe, an investment leverage ratio of 1:8 for the grant. The remaining core operating cost can be achieved with an in-kind contribution of \$420,000 from the Town of Bridgewater. As indicated in Table 9.2, 2.6% of the Smart Cities Challenge grant would be held in reserve as a contingency. If unused, this amount can help subsidize home energy improvements for program participants.

Energy Poverty Reduction Program Total Costs by Activity for Each Program Year

Program	Activity	2020-21	2021-22	2022-23	2023-24	2024-25	Years 1-5 Total	Years 6-10 Total	Grand Total
Sub-Totals	Program Development	\$1,295,000	\$700,350	\$128,778	\$130,710		\$2,254,838		\$2,254,838
	Program Operations & Administration	\$207,500	\$624,225	\$691,539	\$750,274	\$890,219	\$3,163,756	\$4,385,043	\$7,548,799
	Capital Planning & Improvements- No ROI		\$1,185,013	\$1,452,617	\$1,905,749	\$2,366,841	\$6,910,219	\$14,693,023	\$21,603,242
	Capital Planning & Improvements- With ROI		\$1,731,945	\$9,199,368	\$11,015,163	\$11,442,793	\$33,389,270	\$25,012,945	\$58,402,215
	Total	\$1,502,500	\$4,241,533	\$11,472,302	\$13,801,896	\$14,699,852	\$45,718,084	\$44,091,010	\$89,809,094

Table 9.1

\$ FINANCIAL

Capitalization by System for Each Program Year

System	Capitalization by Program Year					
	2020-21	2021-22	2022-23	2023-24	2024-25	Total
Overall Program Management	\$157,500	\$139,563	\$131,354	\$133,324	\$214,926	\$776,666
Housing Energy Management System - Operations	\$422,500	\$406,000	\$282,024	\$305,861	\$197,679	\$1,614,064
Community Energy Systems	\$387,500	\$185,238	\$43,785	\$44,441	\$45,108	\$706,071
Mobility Improvement System	\$83,750	\$54,556	\$14,166	\$14,378	\$14,594	\$181,444
Investment System	\$225,000	\$274,050	\$146,807	\$162,080	\$177,778	\$985,716
Coordinated Access System	\$120,000	\$157,325	\$92,720	\$109,796	\$127,364	\$607,205
Contingency (2.6%)						\$128,834
Total	\$1,396,250	\$1,216,731	\$710,855	\$769,881	\$777,449	\$5,000,000

Table 9.2

A detailed breakdown of all program costs, including the line items that make up the core operating costs, are described in detail in the tables that follow in this chapter.

FINANCIAL CONTROLS AND STANDARDS

The accounts of the Town of Bridgewater are kept and reported on in accordance with Generally Accepted Accounting Principles adopted for Nova Scotia Municipalities as defined in the Financial Reporting and Accounting Manual (FRAM) prescribed by the Minister of the Department of Municipal Affairs and as outlined

in the Canadian Public Sector Accounting Standards. The Town undergoes an annual external audit by a Registered Municipal Auditor as defined in Section 457 of the Nova Scotia Municipal Government Act. The accounts for the Energy Poverty Reduction Program, as a program of the Town of Bridgewater, will adhere to these same financial controls and standards.

In accordance with municipal accounting principles, projected program expenditures by the Town of Bridgewater are inclusive of municipal net of HST. To account for general inflation, conservative cost escalation of 1.5% per year has

been built into each year of the program, starting with 0% inflation in fiscal year 2020-21, and increasing by 1.5% per year, compounded annually.

COST OF SERVICES

COORDINATED ACCESS SYSTEM

Estimated service costs for the Coordinated Access System are presented in Table 9.3. Cost assumptions were developed in consultation with community partners who are familiar with the delivery and cost of community support services. In particular the local delivery of housing support services by Family Services of Western Nova Scotia was used as the basis of the Coordinated Access Service Provision. As the Homeless Individuals and Families Information System (HIFIS) is a free service, database set up costs relate to the design and programming of data entry templates and reports by program staff. Service costs to clients were calculated using an annual cost per client of approximately \$600 per year, plus inflation. These services are projected to be delivered by 1.5FTE (full time equivalent) social workers for the first three years of the program, and by 2.0FTE social workers from 2023-24 onward. These program staff also account for the majority of the program design, partnership development and coordination, and program evaluation and improvement work. In-kind provision of office space has not been accounted for in this model, as we assume that service providers will be able to provide those needs.

\$ FINANCIAL

Cost of Services for Coordinated Access System

Program	Activity	Cost Type	2020-21	2021-22	2022-23	2023-24	2024-25	Years 1-5 Total	Years 6-10 Total	Grand Total
Partnership Coordination	Partnership development	Program Development	\$20,000	\$10,150				\$30,150		\$30,150
	Partner coordination	Program Operations & Administration		\$10,150	\$10,302	\$10,457	\$10,614	\$41,523	\$55,505	\$97,027
	Program evaluation & improvement	Program Operations & Administration	\$20,000	\$20,300	\$20,605	\$20,914	\$21,227	\$103,045	\$111,009	\$214,054
Coordinated Access Service Provision	Detailed program design	Program Development	\$50,000	\$50,750				\$100,750		\$100,750
	Staff hiring & training	Program Development	\$10,000	\$10,150				\$20,150		\$20,150
	Database setup	Program Development	\$10,000	\$10,150				\$20,150		\$20,150
	Serve 2021-22 clients	Program Operations & Administration		\$30,450				\$30,450		\$30,450
	Serve 2022-23 clients	Program Operations & Administration			\$46,360			\$46,360		\$46,360
	Serve 2023-24 clients	Program Operations & Administration				\$62,741		\$62,741		\$62,741
	Serve 2024-25 clients	Program Operations & Administration					\$79,602	\$79,602		\$79,602
	Serve 2025-30 clients	Program Operations & Administration							\$499,600	\$499,600
	IT system maintenance	Program Operations & Administration		\$5,075	\$5,151	\$5,228	\$5,307	\$20,761	\$27,752	\$48,514
	Communications & marketing	Program Operations & Administration	\$10,000	\$10,150	\$10,302	\$10,457		\$51,523	\$55,505	\$107,027
Sub-Totals	Program Development		\$90,000	\$81,200				\$171,200		\$171,200
	Program Operations & Administration		\$30,000	\$76,125	\$92,720	\$109,769	\$127,364	\$436,005	\$749,371	\$1,185,376
	Total		\$120,000	\$157,325	\$92,720	\$109,769	\$127,364	\$607,205	\$749,371	\$1,356,576

Table 9.3

HOUSING ENERGY MANAGEMENT SYSTEM – FINANCIAL SUMMARY

Estimated service costs for the Housing Energy Management System are presented in Table 9.4. Cost assumptions were developed in consultation with community partners and with energy service providers including Efficiency Nova Scotia and Clean Foundation, who deliver related programs in the Bridgewater area. Data platform development and maintenance costs were assumed to involve the development of the

main components of the Municipal Enterprise Resource Planning platform and the Energy Management Information System (EMIS), and calculated based on market information from Bridgewater's current Municipal Enterprise Resource Planning provider, TownSuite, and from industry sources. Technical navigation services for clients and service and supplier procurement and coordination costs are calculated at \$500 and \$250 per client per year, respectively, plus inflation. These services are projected to be delivered

by 2.0FTE (full time equivalent) technical staff plus 1.0FTE information technology staff. These program staff also account for the majority of the program design, partnership development and coordination, community engagement, program administration, and program evaluation and improvement work, and provide a share of their services to the other program service areas. Capital planning and improvement costs for housing retrofits and new construction are detailed in Tables 9.4, 9.5, 9.6, and 9.7.

\$ FINANCIAL

Housing Energy Management System

Sub-Program	Activity	Cost Type	2020-21	2021-22	2022-23	2023-24	2024-25	Years 1-5 Total	Years 6-10 Total	Grand Total
Program Coordination & Administration	Partnership development	Program Development	\$30,000	\$20,300				\$50,300		\$50,300
	Partner coordination	Program Operations & Administration		\$10,150	\$10,302	\$10,457	\$10,614	\$41,523	\$55,505	\$97,027
	Staff hiring & training	Program Development	\$20,000					\$20,000		\$20,000
	Technical navigation services for clients	Program Operations & Administration		\$25,375	\$38,633	\$52,284	\$66,335	\$182,628	\$416,334	\$598,961
	Detailed program design	Program Development	\$100,000	\$50,750				\$150,750		\$150,750
	Database setup - municipal enterprise resource planning (ERP) system	Program Development	\$75,000	\$76,125				\$151,125		\$151,125
	Database setup - energy management information system (EMIS)	Program Development	\$125,000	\$126,875	\$128,778	\$130,710		\$511,363		\$511,363
	IT system maintenance	Program Operations & Administration	\$40,000	\$40,600	\$41,209	\$41,827	\$42,455	\$206,091	\$222,018	\$428,109
	Service & supplier procurement & coordination	Program Operations & Administration		\$12,688	\$19,317	\$26,142	\$33,168	\$91,314	\$208,167	\$299,481
	Community engagement	Program Operations & Administration	\$10,000	\$10,150	\$10,302	\$10,457	\$10,614	\$51,523	\$55,505	\$107,027
	Program administration	Program Operations & Administration	\$10,000	\$20,300	\$20,605	\$20,914	\$21,227	\$93,045	\$111,009	\$204,054
	Program evaluation & improvement	Program Operations & Administration	\$20,000	\$20,300	\$20,605	\$20,914	\$21,227	\$103,045	\$111,009	\$214,054
	Communications & marketing	Program Operations & Administration	\$20,000	\$20,300	\$20,605	\$20,914	\$21,227	\$103,045	\$111,009	\$214,054
	Plan and implement 2021-22 home retrofits			\$2,434,427				\$2,434,427		\$2,434,427
Housing Retrofits	Capital Planning & Improvements- No ROI			\$844,988				\$844,988		\$844,988
	Capital Planning & Improvements- With ROI			\$1,589,439				\$1,589,439		\$1,589,439
	Plan and implement 2022-23 home retrofits				\$3,701,176			\$3,701,176		\$3,701,176
	Capital Planning & Improvements- No ROI				\$1,296,023			\$1,296,023		\$1,296,023
	Capital Planning & Improvements- With ROI				\$2,405,153			\$2,405,153		\$2,405,153

CONTINUED

\$ FINANCIAL

Sub-Program	Activity	Cost Type	2020-21	2021-22	2022-23	2023-24	2024-25	Years 1-5 Total	Years 6-10 Total	Grand Total
Housing Retrofits	Plan and implement 2023-24 home retrofits					\$4,947,188		\$4,947,188		\$4,947,188
	Capital Planning & Improvements- No ROI					\$1,760,400		\$1,760,400		\$1,760,400
	Capital Planning & Improvements- With ROI					\$3,186,789		\$3,186,789		\$3,186,789
	Plan and implement 2024-25 home retrofits						\$6,373,615	\$6,373,615		\$6,373,615
	Capital Planning & Improvements- No ROI						\$2,238,416	\$2,238,416		\$2,238,416
	Capital Planning & Improvements- With ROI						\$4,135,200	\$4,135,200		\$4,135,200
	Plan and implement 2025-30 home retrofits								\$37,089,975	\$37,089,975
	Capital Planning & Improvements- No ROI								\$14,006,937	\$14,006,937
	Capital Planning & Improvements- With ROI								\$23,083,038	\$23,083,038
New Construction	Plan and implement 2021-22 home retrofits			\$127,281				\$127,281		\$127,281
	Capital Planning & Improvements- No ROI			\$5,075				\$5,075		\$5,075
	Capital Planning & Improvements- With ROI			\$122,206				\$122,206		\$122,206
	Plan and implement 2022-23 home retrofits				\$180,866			\$180,866		\$180,866
	Capital Planning & Improvements- No ROI				\$7,212			\$7,212		\$7,212
	Capital Planning & Improvements- With ROI				\$173,655			\$173,655		\$173,655
	Plan and implement 2023-24 home retrofits					\$236,031		\$236,031		\$236,031
	Capital Planning & Improvements- No ROI					\$9,411		\$9,411		\$9,411
	Capital Planning & Improvements- With ROI					\$226,619		\$226,619		\$226,619

Sub-Program	Activity	Cost Type	2020-21	2021-22	2022-23	2023-24	2024-25	Years 1-5 Total	Years 6-10 Total	Grand Total
New Construction	Plan and implement 2024-25 home retrofits						\$292,809	\$292,809		\$292,809
	Capital Planning & Improvements- No ROI						\$11,675	\$11,675		\$11,675
	Capital Planning & Improvements- With ROI						\$281,134	\$281,134		\$281,134
	Plan and implement 2025-30 home retrofits								\$1,894,434	\$1,894,434
	Capital Planning & Improvements- No ROI								\$75,536	\$75,536
	Capital Planning & Improvements- With ROI								\$1,818,898	\$1,818,898
Sub-Totals	Program Development		\$350,000	\$274,050	\$128,778	\$130,710		\$883,538		\$883,538
	Program Operations & Administration		\$100,000	\$159,863	\$181,577	\$203,907	\$226,866	\$872,213	\$1,290,555	\$2,162,768
	Capital Planning & Improvements- No ROI			\$850,063	\$1,303,235	\$1,769,811	\$2,250,091	\$6,173,199	\$14,082,473	\$20,255,671
	Capital Planning & Improvements- With ROI			\$1,711,645	\$2,578,808	\$3,413,408	\$4,416,334	\$12,120,195	\$24,901,936	\$37,022,130
	Total		\$450,000	\$2,995,620	\$4,192,398	\$5,517,836	\$6,893,291	\$20,049,144	\$40,274,964	\$60,324,108

Table 9.4



A heat pump condenser on the side of a home.

HOUSING ENERGY MANAGEMENT SYSTEM – HOUSING RETROFITS

Table 9.5 provides the estimated breakdown of the 318 target homes to be served through the Housing Retrofit program. Homes are divided into 13 common ‘archetypes’, defined by the combination of building form, sub-type, age, and type of heating system. Archetypes are defined in detail in Bridgewater’s Community Energy Investment Plan. The combination of archetypes represents as closely as possible the housing type distribution

of Bridgewater households who reported living in energy poverty in a community-wide survey issued early in 2019. Actual participation rates may vary from this distribution, depending on program enrolment.

Social investing is giving both the community and traditional investors a choice to invest in social outcomes that are of interest to them.

– COMMUNITY SERVICE ORGANIZATION

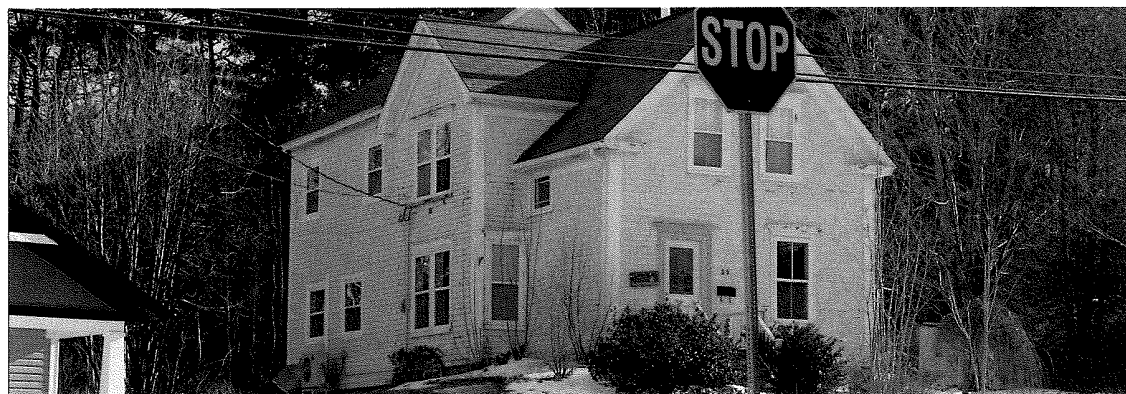
\$ FINANCIAL

Number of Retrofits by Housing Archetype for each Program Year

Year			2020-21		2021-22		2022-23		2023-24		2024-25		Years 1-5 Total	Years 6-10 Total	Grand Total
Form	Type	Age	Electric	Oil	Electric	Oil	Electric	Oil	Electric	Oil	Electric	Oil			
Multi Unit	converted	new	0	0	1	1	2	2	3	2	3	3	17	35	52
Multi Unit	converted	old	0	0	0	0	1		2	2	1	1	7	20	27
Multi Unit	purposebuilt	new	0	0	2	2	3	3	4	4	5	6	29	55	84
Multi Unit	purposebuilt	old	0	0	1	2	3	2	3	3	4	4	22	46	68
Semi Detached	large	new	0	0	1	1	1	1	1	2	2	2	11	26	37
Single Detached	small high	new	0	0	2	2	3	3	4	4	5	5	28	60	88
Single Detached	small high	old	0	0	1	2	2	2	3	2	4	3	19	40	59
Single Detached	medium low	new	0	0	2	3	3	4	5	4	6	6	33	70	103
Single Detached	medium high	new	0	0	3	2	4	4	5	5	7	6	36	76	112
Single Detached	medium high	old	0	0	1	1	1	1	2	1	2	2	11	26	37
Single Detached	large low	new	0	0	3	3	5	4	5	6	7	7	40	83	123
Single Detached	small low	new	0	0	1	1	2	2	3	1	3	3	17	40	57
Mobile	N/A	N/A	0	0	4	3	5	5	7	7	8	9	48	105	153
Total			0		45		68		91		114		318	682	1000

Table 9.5

Table 9.6 provides a breakdown of the capital planning and improvement costs for the 318 homes that are projected to enroll in the Housing Retrofit program. Unit costs for most line items, including those with and without any financial return on investment (ROI) were estimated based on existing housing retrofit programs including the Clean Energy Financing, Clean Net Zero, and HomeWarming programs. Smart thermostat, smart submeter, and home energy dashboard costs were estimated by energy consulting firm Green Power Labs.



An old Bridgewater home converted into a multi-unit residential apartment building.

Cost of Services for Retrofit Activities by Program Year

Retrofit Activity	Cost Type	2020-21	2021-22	2022-23	2023-24	2024-25	Years 1-5 Total	Years 6-10 Total	Grand Total
Assessment & Planning	No financial ROI		\$228,375	\$350,277	\$475,784	\$604,977	\$1,659,412	\$3,785,659	\$5,445,071
Contractor Administration	No financial ROI		\$114,188	\$175,138	\$237,892	\$302,489	\$829,706	\$1,892,829	\$2,722,536
Temporary Displacement Cost	No financial ROI		\$45,675	\$70,055	\$95,157	\$120,995	\$331,882	\$757,132	\$1,089,014
Deferred Maintenance Costs	No financial ROI		\$456,750	\$700,553	\$951,567	\$1,209,954	\$3,318,825	\$7,571,317	\$10,890,142
Lighting	With financial ROI		\$3,654	\$5,604	\$7,613	\$9,680	\$26,551	\$54,354	\$80,905
Appliances	With financial ROI		\$91,350	\$140,111	\$190,313	\$241,991	\$663,765	\$1,358,851	\$2,022,616
Deep Retrofit - Thermal	With financial ROI		\$616,460	\$942,810	\$1,238,920	\$1,613,273	\$4,411,463	\$8,998,855	\$13,410,318
Solar Domestic Hot Water	With financial ROI		\$159,863	\$245,194	\$333,049	\$423,484	\$1,161,589	\$2,377,989	\$3,539,577
Solar Photovoltaic	With financial ROI		\$635,390	\$945,747	\$1,247,494	\$1,629,193	\$4,457,824	\$9,040,649	\$13,498,473
Smart Thermostat	With financial ROI		\$59,885	\$90,660	\$121,822	\$157,082	\$429,448	\$902,636	\$1,332,085
Smart Submeter + Home Energy Dashboard	With financial ROI		\$22,838	\$35,028	\$47,578	\$60,498	\$165,941	\$349,703	\$515,645
Total			\$2,434,427	\$3,701,176	\$4,947,188	\$6,373,615	\$17,456,406	\$37,089,975	\$54,546,381

Table 9.6

Number of Newly Constructed Homes by Housing Archetype for each Program Year

Year	2020-21	2021-22	2022-23	2023-24	2024-25	Years 1-5 Total	Years 6-10 Total	Grand Total
New Construction - Row Homes	0	5	7	9	11	32	68	100

Table 9.7

My experience right now, our home is not fit for anyone to be in, I have two small children who live there, my kids are sick non-stop, and we can't afford to move.

- BRIDGEWATER RESIDENT

HOUSING ENERGY MANAGEMENT SYSTEM – NEW CONSTRUCTION

Table 9.7 provides the estimated breakdown of the 32 target homes to be served through the New Construction program. Homes are estimated to uniformly be row homes. Actual participation rates may vary from this distribution, depending on program enrolment.

Table 9.8 provides a breakdown of the capital planning and improvement costs for the 32 homes that are projected to enroll in the New Construction program. Unit costs for line items are incremental costs above the cost of construction to building code. Sources of cost information is the same as for the Housing Retrofit program.

Cost of Services for New Construction Activities by Program Year

New Construction Activity	Cost Type	2020-21	2021-22	2022-23	2023-24	2024-25	Years 1-5 Total	Years 6-10 Total	Grand Total
Assessment & Planning	No financial ROI		\$5,075	\$7,212	\$9,411	\$11,675	\$33,373	\$75,536	\$108,908
Incremental Cost increase - Lighting	With financial ROI		\$406	\$577	\$753	\$934	\$2,670	\$6,043	\$8,713
Incremental Cost increase - Appliances	With financial ROI		\$10,150	\$14,423	\$18,822	\$23,350	\$66,745	\$151,071	\$217,817
Incremental Cost increase - Envelope - Thermal	With financial ROI		\$50,750	\$72,116	\$94,111	\$116,750	\$333,727	\$755,356	\$1,089,083
Incremental Cost increase - Solar Domestic Hot Water	With financial ROI		\$17,763	\$25,241	\$32,939	\$40,862	\$116,804	\$264,375	\$381,179
Incremental Cost increase - Solar Photovoltaic	With financial ROI		\$35,525	\$50,481	\$65,878	\$81,725	\$233,609	\$528,749	\$762,358
Incremental Cost increase - Smart Thermostat	With financial ROI		\$5,075	\$7,212	\$9,411	\$11,675	\$33,373	\$75,536	\$108,908
Incremental Cost increase - Smart Submeter + Home Energy Dashboard	With financial ROI		\$2,538	\$3,606	\$4,706	\$5,837	\$16,686	\$37,768	\$54,454
Total			\$127,281	\$180,866	\$236,031	\$292,809	\$836,987	\$1,894,434	\$2,731,421

Table 9.8

COMMUNITY ENERGY SYSTEMS

Estimated service costs for the Community Energy Systems are presented in Table 9.9. Cost assumptions were developed in consultation with energy development consultants, in particular engineering consultants Roswall Inc. Costs are 100% external to the organization – no staffing is included in these figures as program staffing that supports this service is in part already included through the Technical Navigator positions, and in part is discounted from the cost model. Data platform development and maintenance costs were assumed to be incremental to development of the main Municipal Enterprise Resource Planning platform and the Energy Management Information System (EMIS), and calculated based on market

information from Bridgewater's current Municipal Enterprise Resource Planning provider, TownSuite, and from industry sources. Construction of the 6MW of solar garden capacity was costed at \$2.20, \$2.00, and \$1.80 per installed watt for 2022-23, 2023-24, and 2024-25 respectively, inflated according to the number of years past 2020-21.

MOBILITY IMPROVEMENT SYSTEM

Estimated service costs for the Mobility Improvement System are presented in Table 9.10. Cost assumptions were developed in consultation with Town of Bridgewater public transit and active transportation planning, engineering, and operations staff. Data platform development and maintenance costs were assumed to be

incremental to development of the main Municipal Enterprise Resource Planning platform and the Energy Management Information System (EMIS), and calculated based on market information from Bridgewater's current Municipal Enterprise Resource Planning provider, TownSuite, and from industry sources. Program design, partnership development, community engagement, program administration, and program evaluation and marketing services are projected to be delivered by 0.25 FTE (full time equivalent) transportation planning staff. Capital planning and improvement costs for public transit improvements are based on current operating data, and costs for active transportation improvements are based on current infrastructure construction costs.

\$ FINANCIAL

Cost of Services for Community Energy Systems by Sub-Program for each Program Year

Sub-Program	Activity	Cost Type	2020-21	2021-22	2022-23	2023-24	2024-25	Years 1-5 Total	Years 6-10 Total	Grand Total
Utility Grade Service Provision	Community-wide energy generation feasibility study	Program Development	\$175,000					\$175,000		\$175,000
	Municipal utility detailed service design	Program Development	\$100,000					\$100,000		\$100,000
	Municipal utility setup and/or service procurement	Program Development	\$50,000	\$101,500				\$151,500		\$151,500
	Legislative & regulatory approval process	Program Development	\$20,000	\$20,300				\$40,300		\$40,300
	Database setup	Program Development	\$50,000	\$20,300				\$70,300		\$70,300
	Utility grade service management	Program Operations & Administration		\$50,750	\$51,511	\$52,284	\$53,068	\$207,613	\$277,523	\$485,136
Solar Garden Development	Conceptual design	Capital Planning & Improvements- No ROI		\$65,975				\$65,975		\$65,975
	Fundraising & financing	Capital Planning & Improvements- No ROI		\$20,300	\$20,605	\$20,914		\$61,818		\$61,818
	Community consultation	Capital Planning & Improvements- No ROI		\$15,225	\$15,453			\$30,678		\$30,678
	Detailed engineering design	Capital Planning & Improvements- No ROI		\$101,500				\$101,500		\$101,500
	Procurement	Capital Planning & Improvements- No ROI		\$20,300				\$20,300		\$20,300
	Permitting	Capital Planning & Improvements - With ROI		\$20,300	\$20,605			\$40,905		\$40,905
	Construction	Capital Planning & Improvements - With ROI			\$6,522,689	\$7,523,330	\$6,872,561	\$20,918,580		\$20,918,580
	Database & IT systems setup	Capital Planning & Improvements - With ROI			\$77,267	\$78,426	\$79,602	\$235,295		\$235,295
	Commissioning	Capital Planning & Improvements - With ROI					\$53,068	\$53,068		\$53,068
	Operation & Maintenance	Capital Planning & Improvements - With ROI					\$21,227	\$21,227	\$111,009	\$132,236
Sub-Totals	Program Development		\$395,000	\$142,100				\$537,100		\$537,100
	Program Operations & Administration			\$50,750	\$51,511	\$52,284	\$53,068	\$207,613	\$277,523	\$485,136
	Capital Planning & Improvements- No ROI			\$223,300	\$36,058	\$20,914		\$280,271		\$280,271
	Capital Planning & Improvements- With ROI			\$20,300	\$6,620,561	\$7,601,756	\$7,026,459	\$21,269,075	\$111,009	\$21,380,084
	Total		\$395,000	\$436,450	\$6,708,130	\$7,674,953	\$7,079,527	\$22,294,060	\$388,532	\$22,682,592

Table 9.9

\$ FINANCIAL

Cost of Services for Mobility Improvement System by Sub-Program for each Program Year

Sub-Program	Activity	Cost Type	2020-21	2021-22	2022-23	2023-24	2024-25	Years 1-5 Total	Years 6-10 Total	Grand Total
Program Coordination & Administration	Detailed program design	Program Development	\$20,000	\$20,300				\$40,300		\$40,300
	Partnership development	Program Development	\$10,000					\$10,000		\$10,000
	Database setup	Program Development	\$50,000	\$20,300				\$70,300		\$70,300
	IT system maintenance	Program Operations & Administration		\$10,150	\$10,302	\$10,457	\$10,614	\$41,523	\$55,505	\$97,027
	Community engagement	Program Operations & Administration	\$5,000	\$5,075	\$5,151	\$5,228	\$5,307	\$25,761	\$27,752	\$53,514
	Program administration	Program Operations & Administration	\$2,500	\$2,538	\$2,576	\$2,614	\$2,653	\$12,881	\$13,876	\$26,757
	Communications & marketing	Program Operations & Administration	\$5,000	\$5,075	\$5,151	\$5,228	\$5,307	\$25,761	\$27,752	\$53,514
	Program evaluation & improvement	Program Operations & Administration	\$10,000	\$10,150	\$10,302	\$10,457	\$10,614	\$51,523	\$55,505	\$107,027
Transit System Improvements	Plan and implement 2021-22 transit improvements	Capital Planning & Improvements-No ROI		\$20,300				\$20,300		\$20,300
	Plan and implement 2022-23 transit improvements	Capital Planning & Improvements-No ROI			\$20,605			\$20,605		\$20,605
	Plan and implement 2023-24 transit improvements	Capital Planning & Improvements-No ROI				\$20,914		\$20,914		\$20,914
	Plan and implement 2024-25 transit improvements	Capital Planning & Improvements-No ROI					\$21,227	\$21,227		\$21,227
	Plan and implement 2025-30 transit improvements	Capital Planning & Improvements-No ROI							\$111,009	\$111,009
Active Transportation Improvements	Plan and implement 2021-22 AT improvements	Capital Planning & Improvements-No ROI		\$91,350				\$91,350		\$91,350
	Plan and implement 2022-23 AT improvements	Capital Planning & Improvements-No ROI			\$92,720			\$92,720		\$92,720
	Plan and implement 2023-24 AT improvements	Capital Planning & Improvements-No ROI				\$94,111		\$94,111		\$94,111
	Plan and implement 2024-25 AT improvements	Capital Planning & Improvements-No ROI					\$95,523	\$95,523		\$95,523
	Plan and implement 2025-30 AT improvements	Capital Planning & Improvements-No ROI							\$499,541	\$499,541
Sub-Totals	Program Development		\$80,000	\$40,600				\$120,600		\$120,600
	Program Operations & Administration		\$22,500	\$32,988	\$33,482	\$33,985	\$34,494	\$157,449	\$180,390	\$337,838
	Capital Planning & Improvements- No ROI			\$111,650	\$113,325	\$115,025	\$116,750	\$456,749	\$610,550	\$1,067,299
	Total		\$102,500	\$185,238	\$146,807	\$149,009	\$151,244	\$734,798	\$790,940	\$1,525,738

Table 9.10

\$ FINANCIAL

Cost of Services for Investment System by Sub-Program for each Program Year

Sub-Program	Activity	Cost Type	2020-21	2021-22	2022-23	2023-24	2024-25	Years 1-5 Total	Years 6-10 Total	Grand Total
Municipal Capitalization System	Detailed program design	Program Development	\$50,000	\$50,750				\$100,750		\$100,750
	Database setup	Program Development	\$50,000	\$20,300				\$70,300		\$70,300
	Staff hiring & training	Program Development	\$10,000					\$10,000		\$10,000
	Partnership development	Program Development	\$20,000	\$20,300				\$40,300		\$40,300
	Project financial planning	Program Operations & Administration	\$30,000	\$30,450	\$30,907	\$31,370	\$31,841	\$154,568	\$166,514	\$321,082
	Plan, confirm, and administer 2021-22 funding	Program Operations & Administration		\$35,525				\$35,525		\$35,525
	Plan, confirm, and administer 2022-23 funding	Program Operations & Administration			\$36,058			\$36,058		\$36,058
	Plan, confirm, and administer 2023-24 funding	Program Operations & Administration				\$36,599		\$36,599		\$36,599
	Plan, confirm, and administer 2024-25 funding	Program Operations & Administration					\$37,148	\$37,148		\$37,148
	Plan, confirm, and administer 2025-30 funding	Program Operations & Administration							\$194,266	\$194,266
	Reporting to funders	Program Operations & Administration		\$15,225	\$15,453	\$15,685	\$15,920	\$62,284	\$83,257	\$145,541
	IT system maintenance	Program Operations & Administration		\$10,150	\$10,302	\$10,457	\$10,614	\$41,523	\$55,505	\$97,027
	Program evaluation & improvement	Program Operations & Administration	\$10,000	\$10,150	\$10,302	\$10,457	\$10,614	\$51,523	\$55,505	\$107,027
Financial Investment Vehicle	Investment vehicle organization creation and/or service procurement	Program Development	\$50,000	\$50,750				\$100,750		\$100,750
	Administration & Reporting	Program Operations & Administration	\$15,000	\$15,225	\$15,453	\$15,685	\$15,920	\$77,284	\$83,257	\$160,541
	Plan, sell, and administer investment raise 2021-22	Program Operations & Administration		\$25,375				\$25,375		\$25,375
	Plan, sell, and administer investment raise 2022-23	Program Operations & Administration			\$38,633			\$38,633		\$38,633
	Plan, sell, and administer investment raise 2023-24	Program Operations & Administration				\$52,284		\$52,284		\$52,284
	Plan, sell, and administer investment raise 2024-25	Program Operations & Administration					\$66,335	\$66,335		\$66,335
	Plan, sell, and administer investment raises 2025-30	Program Operations & Administration							\$416,334	\$416,334
Sub-Totals	Program Development		\$180,000	\$142,100				\$322,100		\$322,100
	Program Operations & Administration		\$55,000	\$142,100	\$157,109	\$172,537	\$188,392	\$715,138	\$1,054,636	\$1,769,774
	Total		\$235,000	\$284,200	\$157,109	\$172,537	\$188,392	\$1,037,238	\$1,054,636	\$2,091,874

Table 9.11

\$ FINANCIAL

INVESTMENT SYSTEM

Estimated service costs for the Investment System are presented in Table 9.11. Cost assumptions were developed in consultation with investment industry experts and investment platform providers including Tapestry Community Capital and MaRS Centre for Social Innovation. Data platform development and maintenance costs were assumed to be incremental to development of the main Municipal Enterprise Resource

Planning platform and the Energy Management Information System (EMIS), and calculated based on market information from Bridgewater's current Municipal Enterprise Resource Planning provider, TownSuite, and from industry sources. Program design, partnership development, project financial planning, funding efforts, reporting to funders, and program evaluation and improvement are projected to be delivered by 1.0 FTE (full time equivalent) financial staff.

OVERALL PROGRAM MANAGEMENT

Estimated service costs for Overall Program Management are presented in Table 9.12.

Cost assumptions were developed based on prior experience with program design and management. Program governance, management, risk management and quality control, and performance measurement and evaluation are projected to be delivered by 1.5 FTE (full time equivalent) program staff.

Cost of Services for Overall Program Management by Sub-Program for each Program Year

Sub-Program	Activity	Cost Type	2020-21	2021-22	2022-23	2023-24	2024-25	Years 1-5 Total	Years 6-10 Total	Grand Total
Program Governance, Management, and Evaluation	Program governance setup	Program Development	\$50,000					\$50,000		\$50,000
	Program governance	Program Operations & Administration		\$20,300	\$20,605	\$20,914	\$21,227	\$83,045	\$111,009	\$194,054
	Program management setup	Program Development	\$50,000					\$50,000		\$50,000
	Program management	Program Operations & Administration		\$50,750	\$51,511	\$52,284	\$53,068	\$207,613	\$277,523	\$485,136
	Program risk management & quality control setup	Program Development	\$50,000					\$50,000		\$50,000
	Program risk management & quality control	Program Operations & Administration		\$50,750	\$51,511	\$52,284	\$53,068	\$207,613	\$277,523	\$485,136
	Phase 1 performance measurement & evaluation	Program Development	\$50,000	\$20,300				\$70,300		\$70,300
	Phase 2 performance measurement & evaluation	Program Operations & Administration		\$40,600	\$51,511	\$52,284		\$144,395		\$144,395
	Phase 3 performance measurement & evaluation	Program Operations & Administration					\$132,670	\$132,670		\$132,670
	Phase 4 performance measurement & evaluation	Program Operations & Administration							\$166,514	\$166,514
Sub-Totals	Program Development		\$200,000	\$20,300				\$220,300		\$220,300
	Program Operations & Administration			\$162,400	\$175,138	\$177,765	\$260,034	\$775,338	\$832,568	\$1,607,906
	Total		\$200,000	\$182,700	\$175,138	\$177,765	\$260,034	\$995,638	\$832,568	\$1,828,206

Table 9.12

CAPITALIZATION OF SERVICES

CAPITALIZATION BY SOURCE

Service capitalization is projected to be achieved from three distinct funding streams:

1. **No investor:** non-debt and non-grant revenues consist of user fees and in-kind or donated services, material, and labour. User fees apply to the Housing Energy Management System and represent a combination of property owner up-front investment into their own property, and payment of administration fees to sustain program operations. User-pay ratios for home energy improvement programs in Nova Scotia range from 0% (HomeWarming Program) to around 50% (Clean Net Zero) with the majority of energy retrofits programs capitalizing upwards of 80% of program costs. However, there are no existing programs

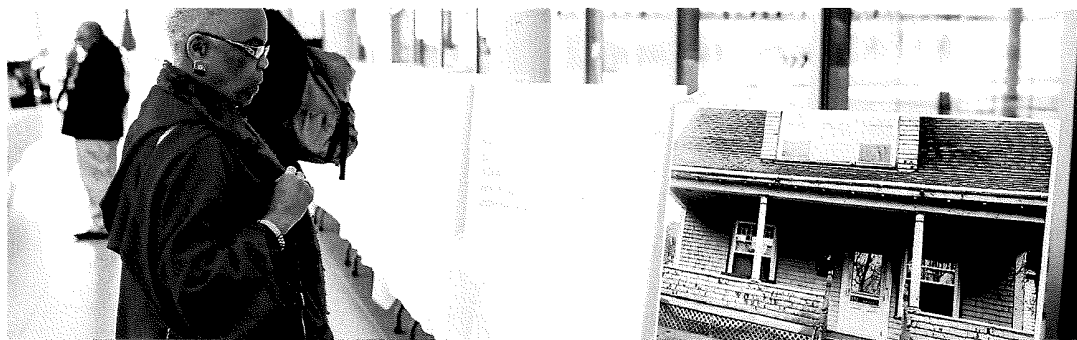
People have to make difficult decisions about what to pay, phone, energy bill, arrears, there is difficulty about what to pay for at each point in time, which is compounded in the winter, it impacts their social well-being and mental health.

– COMMUNITY SERVICE ORGANIZATION

that provide greater than \$20,000 in financing or funding for single family homes, and only limited program dollars for multi-unit buildings. User fees apply to the Investment System as administration fees can be leveraged on investment raises. In-kind material and services can be expected for the Coordinated Access System and Housing Energy Management System as there is ample opportunity to fundraise for these services within the local community.

2. **Financial investor:** capital raises from investors that require dividends or interest to be generated from their investments, which means that financed activities must generate a positive return on investment (ROI). ROIs apply to community energy systems and ROI components of housing retrofits and new construction. Overall program management may need to charge an administrative fee to cover expenses once Program Maturity (Phase 4) is reached. Financial investors also includes energy performance contractors.

3. **Specialized investor:** funding from organizations that do not expect a financial return on their investment and instead expect to achieve social impact or other public benefit. Includes issuers of loan guarantees, provincial energy rebates and incentives, philanthropic charitable and non-profit funding, Provincial and Federal government funding including the Smart Cities Challenge, and municipal funding and in-kind contributions.



A Bridgewater resident views an exhibit on energy poverty at a Smart Cities Challenge Open House.

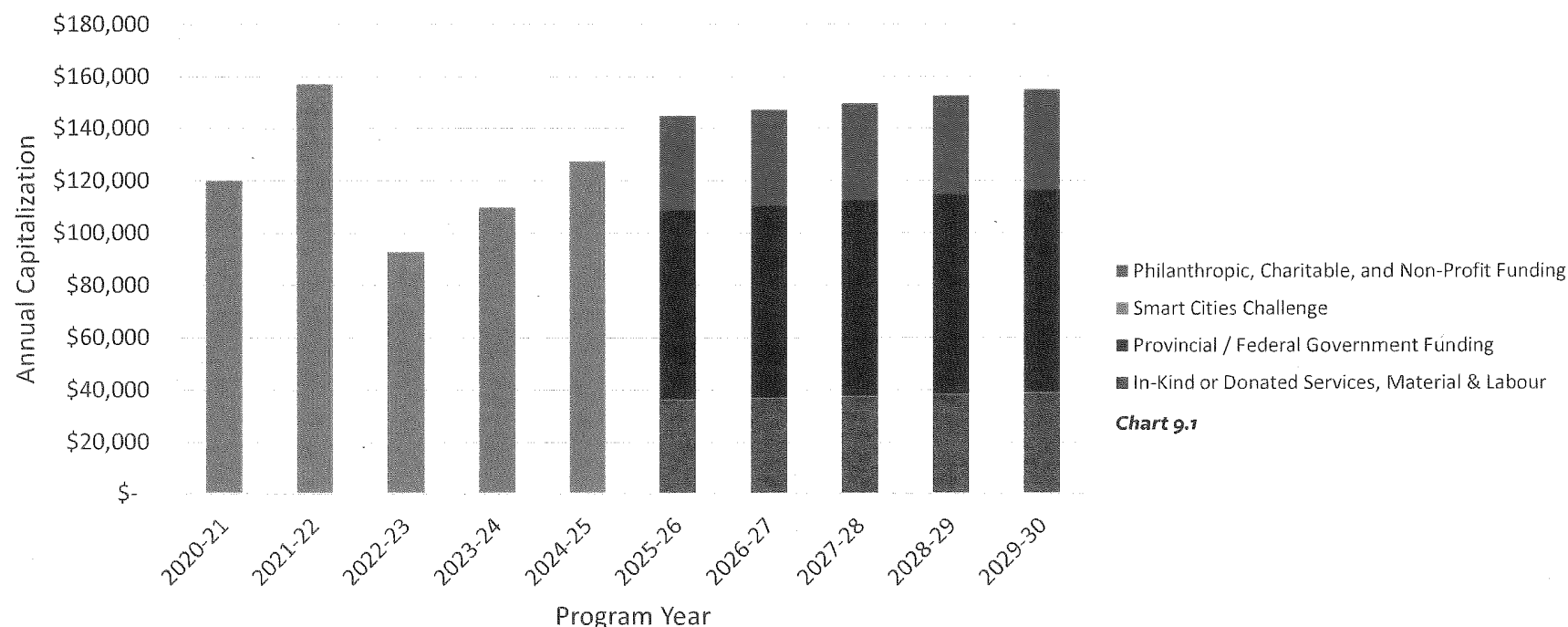
Capitalization projections by service area are provided in Table 9.13. Projections are separated into years 1-5 (within the Smart Cities Challenge timeframe) and years 6-10 (Program Maturity). Further explanations on capitalizations projections by program service are provided in the following sections.

Capitalization by Source

Capitalization Source		Coordinated Access System		Housing Energy Management System		Community Energy Systems		Mobility Improvement System		Investment System		Overall Program Management		Total	
		Years 1-5	Years 6-10	Years 1-5	Years 6-10	Years 1-5	Years 6-10	Years 1-5	Years 6-10	Years 1-5	Years 6-10	Years 1-5	Years 6-10	Years 1-5	Years 6-10
No investor (direct cost recovery)	User fees	0%	0%	14%	15%	0%	0%	0%	0%	0%	47%	0%	0%	6%	15%
	In-kind or donated services, material and labour	0%	25%	5%	5%	0%	0%	0%	0%	0%	0%	0%	0%	2%	5%
Financial investor expecting full financial ROI	Financial investors	0%	0%	25%	25%	95%	89%	0%	0%	0%	0%	0%	36%	57%	24%
Specialized investor not expecting financial ROI	Loan guarantees & forgivable loans	0%	0%	3%	3%	0%	0%	0%	0%	0%	0%	0%	0%	1%	3%
	Provincial energy rebates	0%	0%	18%	21%	0%	0%	0%	0%	0%	0%	0%	0%	8%	19%
	Philanthropic, charitable, and non-profit funding	0%	25%	0%	1%	0%	0%	0%	0%	0%	0%	0%	18%	0%	1%
	Smart Cities Challenge	100%	0%	9%	0%	3%	0%	25%	0%	95%	0%	78%	0%	11%	0%
	Provincial/Federal government funding	0%	50%	26%	30%	1%	0%	22%	38%	0%	47%	0%	18%	12%	30%
	Municipal funding & in-kind	0%	0%	1%	0%	0%	11%	54%	62%	5%	5%	22%	28%	2%	2%
Total		100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%

Table 9.13

Coordinated Access System Capitalization Sources



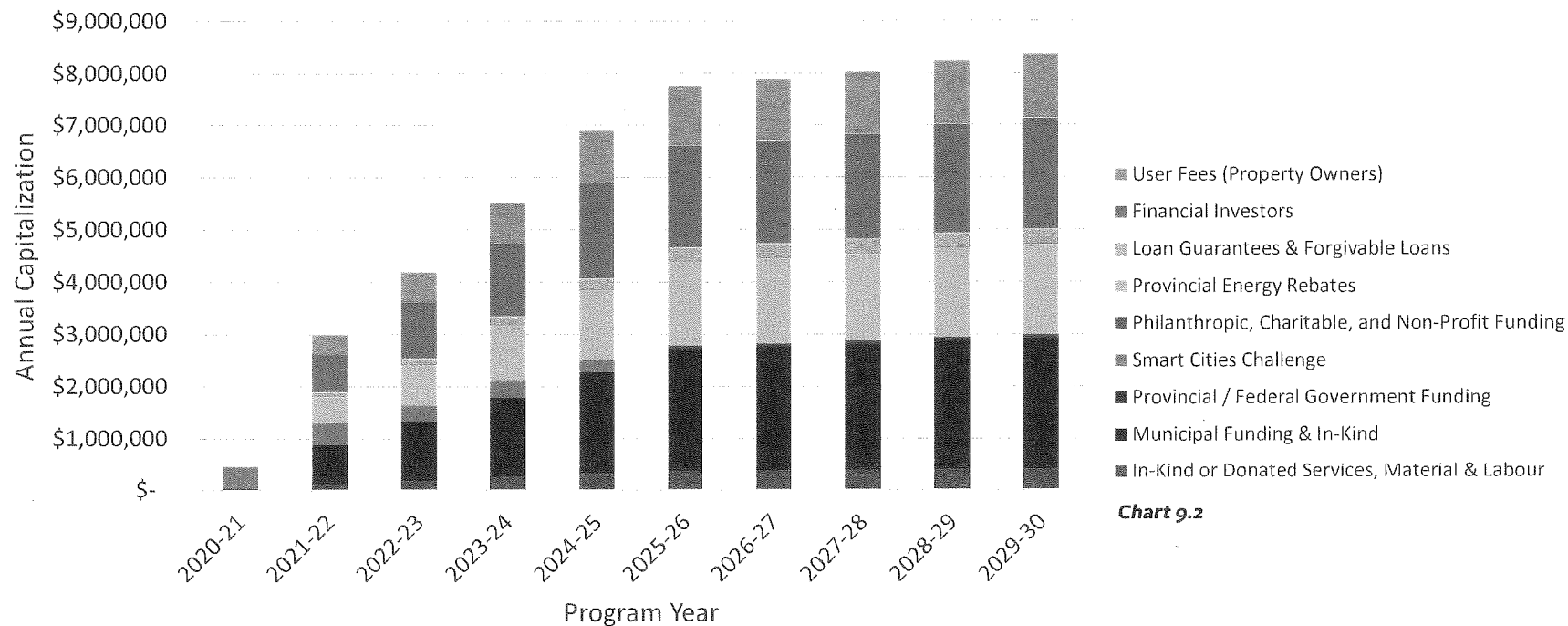
As seen in Chart 9.1, we propose that the Coordinated Access System receive 100% of its development and operating funding from the Smart Cities Challenge grant in years 1-5. This amounts to \$607,205. This allows the program to be designed and prototyped with little to no financial risk to it, thereby allowing it to demonstrate its value to the community and to other funders, while protecting services for its clients for a 5-year duration. After the Smart Cities

Challenge timeframe, service funding would be expected from in-kind or donated services (25%), senior government grant funding (50%) and philanthropic or charitable funding (25%). As a community service with no own-source revenue potential, government and charitable funding would be required to sustain the service over the long term. Our proposition is that the public benefit conferred by the service in saved health care, protective services, legal, and social service

costs through mitigated social harms would far outweigh the cost of funding the service, thereby supporting this social investment on rational macroeconomic grounds.

So much money can be saved upfront by providing coordinated access to service
– COMMUNITY SERVICE ORGANIZATION

Housing Energy Improvement System Capitalization Sources

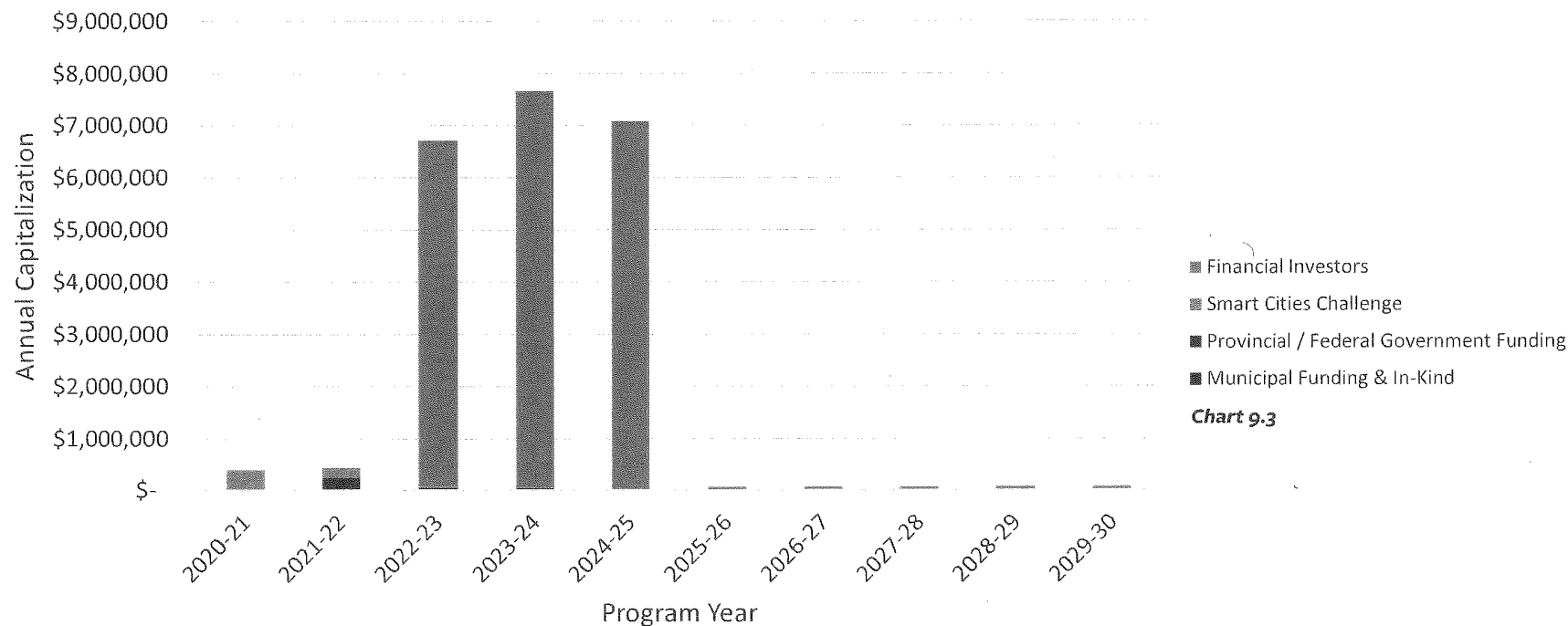


As seen in Chart 9.2, we propose that the Housing Energy Improvement System receive its development and operating funding from the Smart Cities Challenge grant in years 1-5. This amounts to \$1,614,064 and represents the most substantial use of the grant, with a large focus on data platform development. Starting in year 2 (2021-22), early prototyping begins with participating property owners, enabling the stacking of other funding and financing sources.

The service is able to make use of a blend of financial investments and specialized funding, which accounts for its unique capitalization potential. Substantial specialized funding exists to support the program, in the form of energy efficiency rebates from Efficiency Nova Scotia and solar install rebates from the Province (modelled at a conservative total of \$10,000 per participating home). The Province also provides specialized funding for deferred maintenance improvements to low income homes,

and capitalizes improvements to Housing Nova Scotia's public housing stock, unit costs for which are included in this calculation. Financial investors are projected to find favourable investment opportunities by contributing around 25% of the capital improvements that create a direct return on investment. Accounting for some allowance for forgivable loans, loan guarantees, and in-kind funding through community fundraising for low-income housing improvements, the remaining 15%

Community Energy Systems Capitalization Sources



to come from property owners as a combination of own funds and administrative fees. After the Smart Cities Challenge timeframe, service capitalization ratios would be expected continue as before, but without the Smart Cities grant.

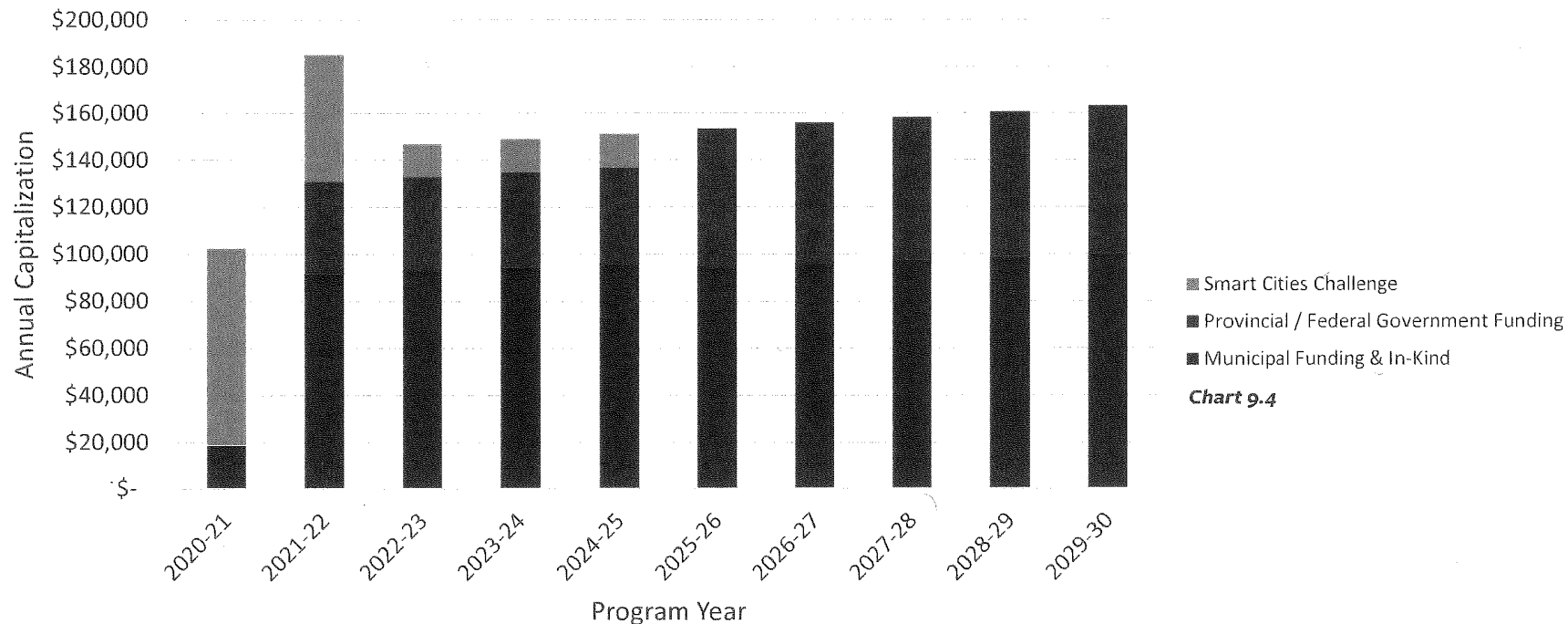
As seen in Chart 9.3, we propose that the Community Energy Systems receive its development and operating funding from the Smart Cities Challenge grant in years 1-5.

This amounts to \$706,071. Additional de-risking funds are projected to come from senior levels of government, which have already funded Bridgewater's community energy initiatives and have indicated continued interest in doing so. Other than some municipal in-kind contribution for program administration, 100% of remaining capital would be sourced from financial investors who could receive ongoing interest payments and/or dividends on their energy investment.



Smart Cities Challenge Open House.

Mobility Improvement System Capitalization Sources



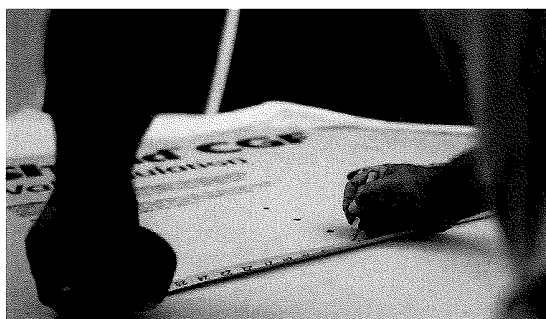
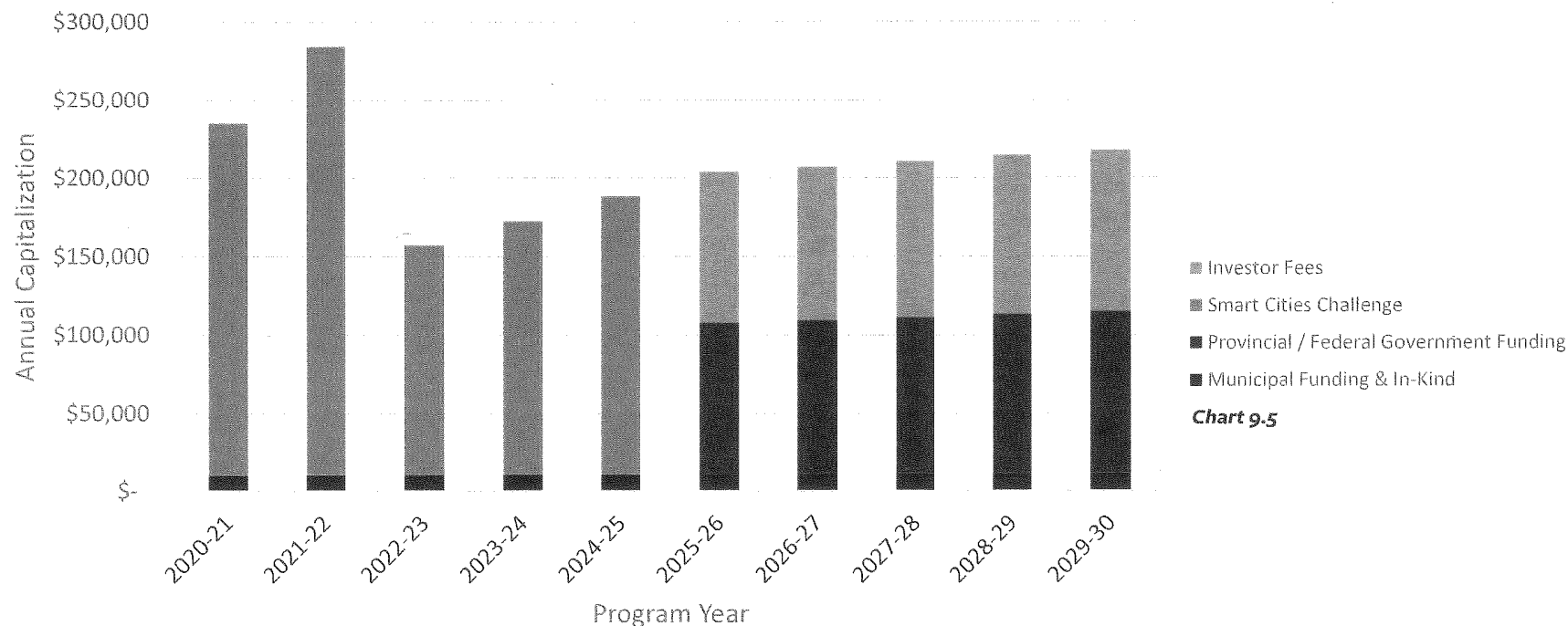
A shared bike lane on a residential street in Bridgewater.

After the Smart Cities Challenge timeframe, it is anticipated that the development of community energy systems would continue, with a similar patterns of capitalization: government de-risking activities followed by private-sector investment.

As seen in Chart 9.4, we propose that the Mobility Improvement System receive its development and operating funding from the Smart Cities Challenge grant in years 1-5. This amounts to

\$181,444. As the Town of Bridgewater's transit and active transportation systems fall under municipal purview, and investments in these systems typically do not yield financial returns, government funding is required to maintain service improvement efforts. Bridgewater has been successful in achieving transportation funding from the Province in recent years, and expects that 25-40% of transportation capital can come from these sources in the long run.

Investment System Capitalization Sources



A contractor marks lines on a board of rigid insulation.

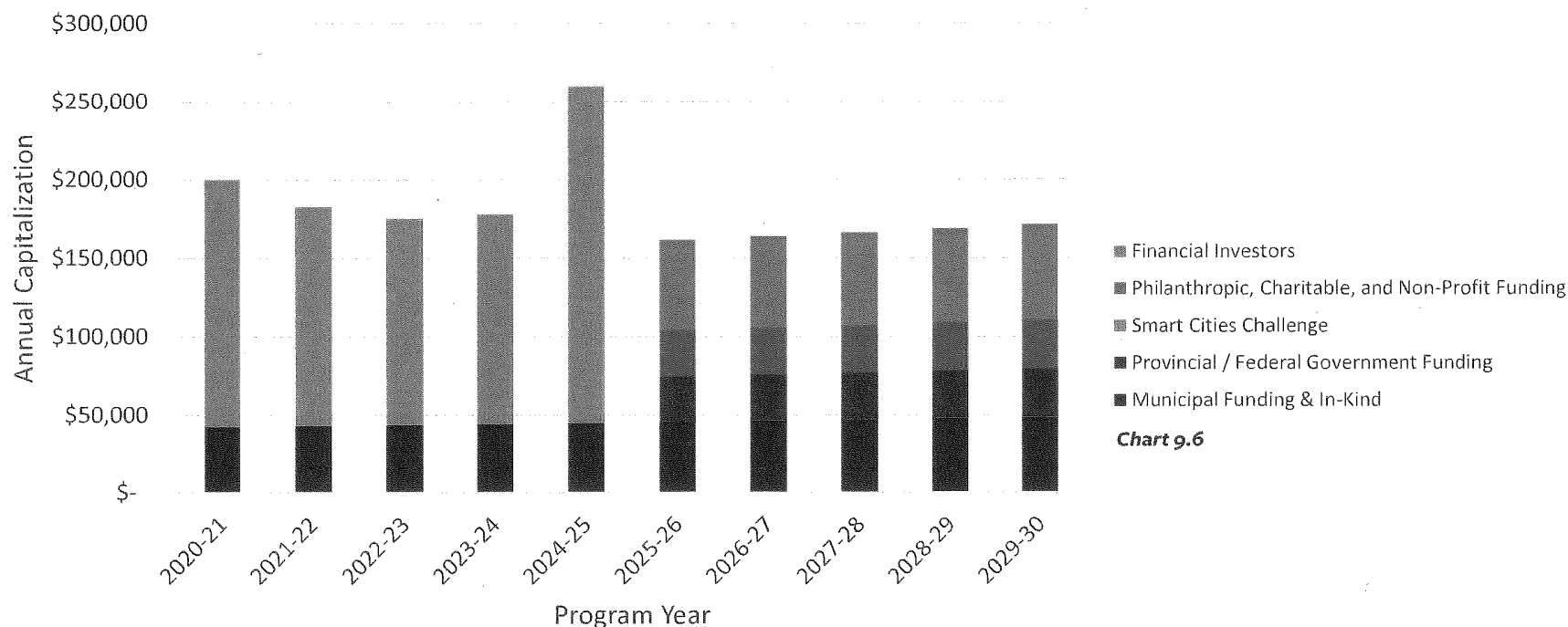
As seen in Chart 9.5, we propose that the Investment System receive its development and operating funding from the Smart Cities Challenge grant in years 1-5. This amounts to \$985,716, representing 95% of costs, with municipal in-kind providing the remainder. This pattern would continue for the 5 years of the Smart Cities Challenge. After that timeframe, service funding is projected to come from a combination of senior government funding to

provide core operating funding to the system, supplemented with user fees collected from investors and funders.

I asked for weather-stripping and all my landlord did was take it from their door and put it on mine.

— BRIDGEWATER RESIDENT

Overall Program Management Capitalization Sources

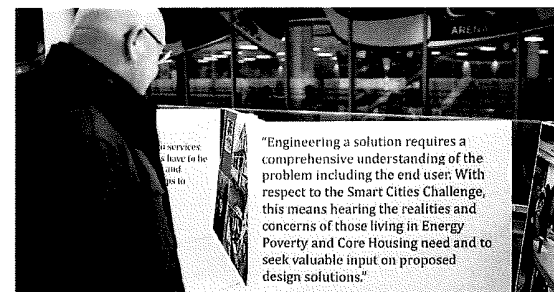


As seen in Chart 9.6, we propose that Overall Program Management receive its development and operating funding from the Smart Cities Challenge grant in years 1-5. This amounts to \$776,666, representing 78% of costs, with municipal in-kind providing the remainder. This pattern would continue for the 5 years of the Smart Cities Challenge. After that timeframe, service funding is projected to come from a combination of municipal, senior

government, and philanthropic funding, with and opportunity to explore subsidization by financial investors.

Last year power bill skyrocketed, you have to find ways, I paid rent and energy bill and put everything else on credit

— BRIDGEWATER RESIDENT



A Bridgewater resident reads a quote from an exhibit on energy poverty at a Smart Cities Challenge Open House.

Energy Poverty Reduction Program Capitalization Sources

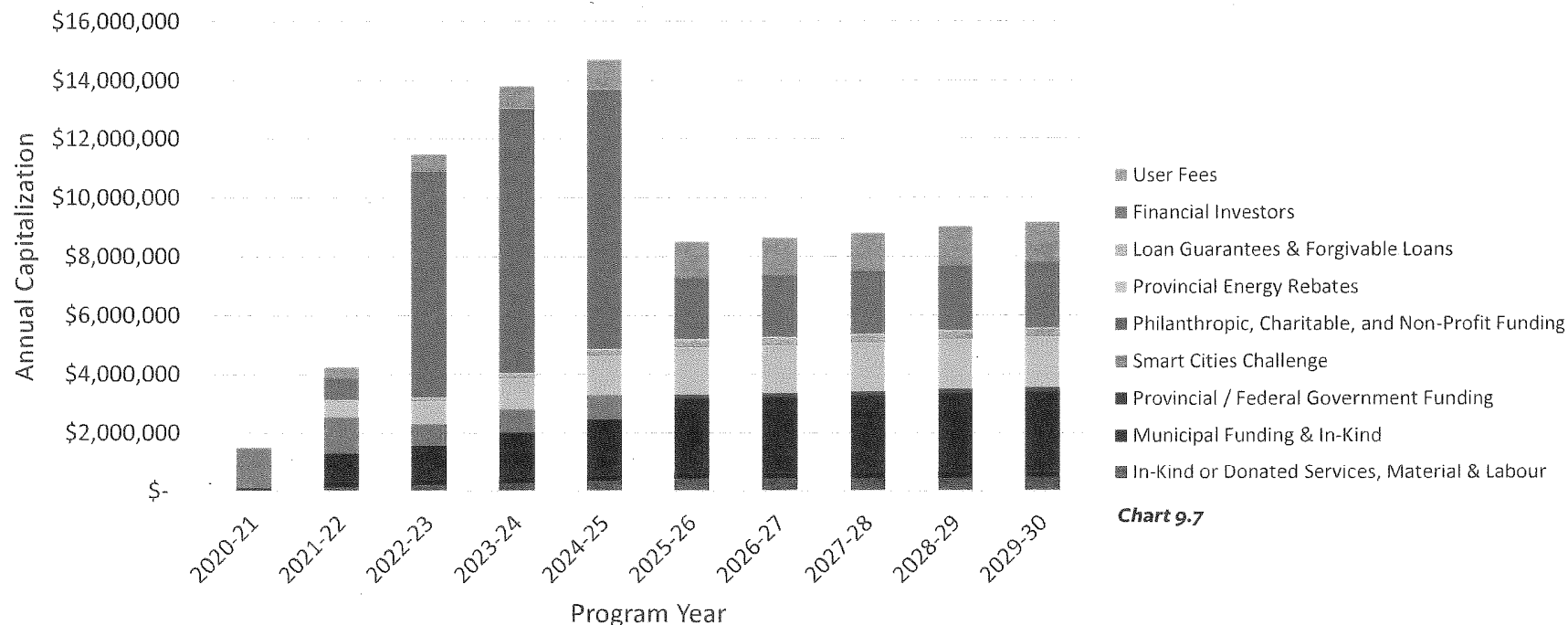


Chart 9.7

In summary, as seen in Chart 9.7, the Smart Cities Challenge grant would fund \$5 million (11%) of the Energy Poverty Reduction Program in years 1-5. A diverse set of projects, with a large share of improvements that generate a positive return on investment, enables the stacking of funding and financing sources for years 2 onward. We proposed that this is a sustainable funding model for a town or a rural community, and that this same capitalization concept can be deployed

throughout the Canadian context to achieve the program objectives presented in this application.

Capitalization Strategies

Community energy projects typically require upfront capital expenditures resulting in competing priorities, investment risks, layers of operating and ownership entities, all captured within a convoluted business model. Fortunately, as the world transitions to a clean

energy economy and technology catches up with societal demand, financing mechanisms are evolving to support low carbon initiatives, and communities across the globe are beginning to share resources, learning experience, and innovative models.

The Town aims to further the aforementioned financial advancements by introducing a replicable model that uses existing tools and

considers access barriers. The financing model is designed to maximize existing resources and does so through an investment system composed of two fluid and close-knit sub-systems. The first being the municipal capitalization system, which is an internal Town application, ideally housed in TownSuite, with budgeting characteristics at its core. The municipal capitalization system is responsible for “specialized finance” stacking, assembling project opportunities and outcomes, sharing the opportunity with its counterpart system, and reporting to specialized financing proponents. The other system, the financial investment vehicle is external to the Town, through an existing or ground-up organization. The financial investment vehicle is responsible for traditional financing, inclusive of community investments, cash disbursements through outcome-data shared by the municipal capitalization system, investing in energy poverty reduction program assets, and reporting to investors.

An important component of the municipal capitalization system, and the Energy Poverty Reduction program as a whole, is utility grade service provision. A Bridgewater energy utility, or municipal-based utility grade services, will decentralize electricity disbursement, streamline the selling and buying of electricity to local stakeholders through self-service, and could mitigate the dependency on local

energy markets if based on renewables. Being able to set optimized electricity tariffs would positively impact the rate of return. This program enhancing structure is enabled through legislation and aligns with the global movement of decentralizing a utility as a means to introduce renewables into the grid. This trend has a successful track record of deployment in the USA through the Community Choice Aggregation model and throughout regions of Europe.

The investment system is also supported by a community owned financing vehicle, which not only provides adequate pools of financing, but also provides socio-economic value to the community. A co-operative (co-op) structure provides its members with a democratic voice in the entity’s decision-making processes. The co-op will own shares in a Community Economic Development Investment Fund (CEDIF) organization, and the coupling of these two symbiotic entities are responsible for financial investment vehicle operations. This model allows for at-risk participation, at-risk dividend-returns and is the vehicle that secures debt-financing and equity contributions from pools of local and national investors.

Early conversations with potential funding proponents suggest there is a wealth of interest in participating in the energy poverty reduction

program due to the returns generated. Investor enthusiasm is further stimulated by the social returns, which align with their organization’s mission. These conversations are reinforced by the current trend of impact investing growth which doubled in size between 2017 and 2018. Costs without a return on investment are not feasible expenditures for the Town to incur without 3rd party intervention. Thus, strategic partnering with social-value investors are essential to the program’s success. Fortunately, there are a wealth of value-aligned resources at the Town’s disposal whose relationships will be leveraged through shared goals and outcomes.

To explain the investment system engine, we’ll first provide a high-level Investment System overview, then review its two major constituents: the Municipal Capitalization System and the Financial Investment Vehicle and all their intricacies. With these components defined at a high-level, we’ll then examine Investment System activities, which provides an overview of the 4 major investment handling stages: planning, intake, delivery, output.

Due to the depth of funding resources, it is also important to define the hierarchy of senior and subordinated resources as a risk-mitigating exercise. Fundamental considerations are then summarized in the conclusion. With these systems defined, it is possible to design an

Investment System schedule which highlights itemized activities and outputs throughout the 10-year Energy Poverty Reduction Program. These are broken down by investment sub-system: Municipal Capitalization System and Financial Investment Vehicle.

INVESTMENT SYSTEM OVERVIEW

The Investment System is composed of two sub-systems which act as the engines that fuels the energy poverty reduction project. The primary reason for this separation is directly linked to current legislation and the resulting inability to house all operations under one roof while still achieving the desired outcomes, as accentuated in the following section, Financial Investment Vehicle. There are 4 dynamic stages in the

investment system's architecture which fit within the context of a Nova Scotian community, but is replicable nationally using tools and resources available within other provincial jurisdictions. At a high-level, both systems will interact with one-another and the Energy Poverty Reduction projects in a circular fashion.

In summary, both investment systems have a pool of investment resources. As Energy Poverty Reduction projects are defined, the energy poverty reduction portfolios are packaged into investible opportunities through the municipal capitalization system and shared with the *financial investment vehicle*. Both systems pool their resources to fund energy poverty reduction projects, and upon the development

of revenue-generating systems, returns and/or reports are disbursed to each system and their pool of investors as outlined in agreements or offering prospectuses.

MUNICIPAL CAPITALIZATION SYSTEM

Municipalities must adhere to Municipal Government Act legislation. As such, the Town itself is limited to borrowing from the Municipal Finance Corporation capped by a debt service coverage ratio, and can only fund projects that it will own 100% of. Thus, off-book financing and diligent partnership agreements drive what is referred to as the "specialized and municipal funding streams". These streams are separated into 4 groups:

1. **Energy Solution Contracts**
 - a. Incentives: through organizations like Efficiency Nova Scotia
 - b. Savings Backed Agreements: through Energy Service Companies
2. **Social Value**
 - a. Senior government: provincial and federal
 - b. Charitable: donating organization
3. **Municipal**
 - a. Through the municipal-based utility from the Municipal Finance Corporation
4. **User Fees**
 - a. Amortizing mechanisms such as Property Assessed Clean Energy (PACE) programs
 - b. Upfront deposits

Municipal Capitalization System

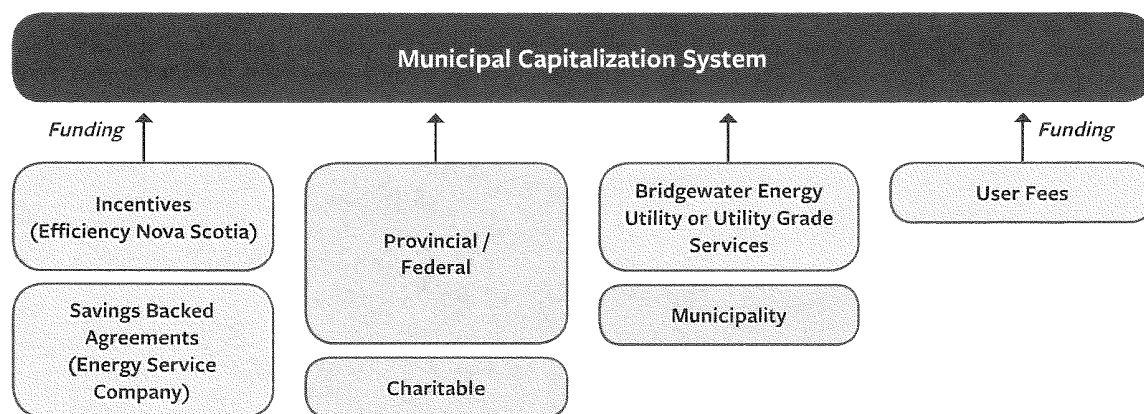


Diagram 9.1

Energy Solution Contracts

Two key players will provide the Town with specialized funding through energy service contracts: Energy Service Companies and Efficiency Nova Scotia.

Energy Service Companies

Energy Service Company ventures have a proven track record of success. These companies have the capacity to execute on large scale ventures, and the risk is placed on the Energy Service Company rather than the property owner or municipality. Although contract negotiations are complex, Energy Service Companies may bid on the retrofit projects and the Town can secure a contract with the most attractive terms (amortization, interest rates, leverage). Energy Service Companies will be procured through a request for proposal process, and the winning proponent will finance and undertake retrofit developments and are paid back through guaranteed energy savings. As a result of economies of scale, the larger the Energy Service Company project scope the more attractive the terms.

Efficiency Nova Scotia

Efficiency Nova Scotia is a province-based, non-profit, energy efficiency utility which provides its customers with energy solutions through rebates on efficiency-based technologies. Through contractual agreements with Efficiency

Nova Scotia, the Town can secure assets and services at a discount.

Social Value Investors

To cover the costs of line items with no return on investment, the Town must secure funding from sources who expect no financial return but are motivated by social outcomes instead. Through the Income Tax Act, the Town is granted the authority to issue official receipts that can be used for charitable expenses for income tax purposes. This will appeal to donors contributing funds to the energy poverty reduction program. The Town envisions support from the federal and provincial government and arms-length government

organizations such as the Canada Mortgage and Housing Association, whose 10-year, \$40-billion national housing strategy plan aligns perfectly with the Town's Energy Poverty Reduction program.

Municipal

In Nova Scotia, municipalities are granted rights to become a wholesale electricity customer under the Electricity Act. This gives the Town of Bridgewater the ability to establish its own municipal-based energy utility, or procure utility grade services, through which it will provide electricity to customers in the town. This could offer significant benefits for Bridgewater, and

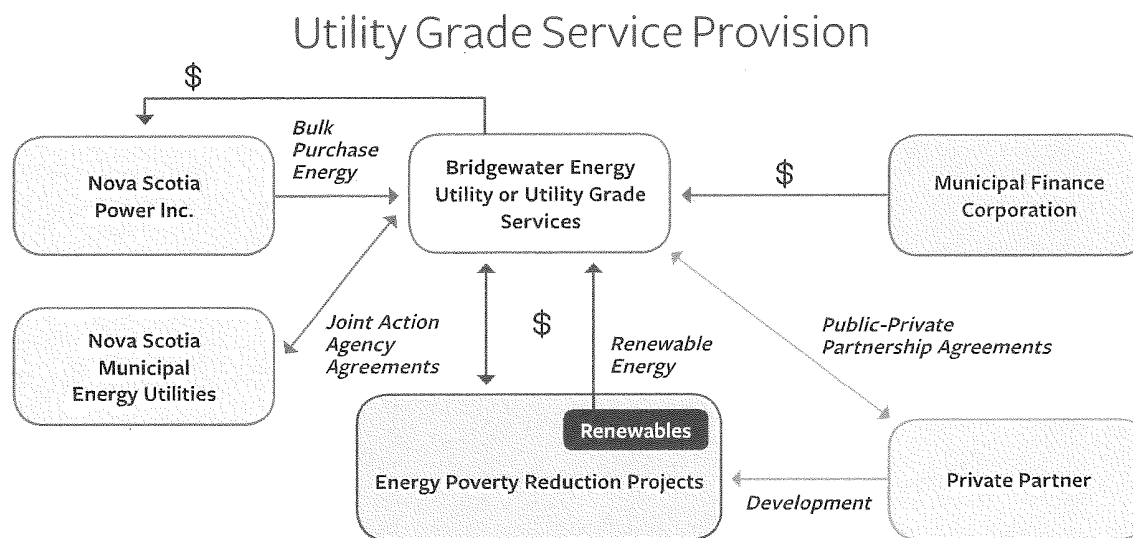


Diagram 9.2

possibly the surrounding communities seeking to accelerate renewable energy and energy efficiency initiatives. An emerging trend of clustering utilities will also be explored further: the idea of combining utility services to optimize operations through interconnectivity while generating additional sources of revenue and/or decreasing existing utility costs. Diagram 9.2 below provides an overview of key municipal-based energy utility actions, and a summary of the infographic's components follows.

Nova Scotia Power Inc. / Renewables / Bulk Purchase Energy / Renewable Energy

The Town will procure its energy needs from the development of local renewable energy sources within the portfolio of energy poverty reduction projects and through bulk purchases of electricity from Nova Scotia Power Inc. Bulk purchasing will reduce costs to the Town's residents and energy imports will reduce over time through the development of local renewable energy sources.

Public-Private Partnership Agreements / Private Partners / Development / Nova Scotia Municipal Energy Utilities/ Joint Action Agency Agreements

Partnering with a private entity through a Public-Private-Partnership agreement/ Alternative Financing and Procurement may provide the Town with the capacity to build

and operate a public utility or procure utility grade services. The Town can leverage its favorable relationships with other Nova Scotia municipal energy utilities to form a Joint Action Agency. Joint Action Agencies are a tool that municipal distribution utilities can use to accomplish their goals of reliable, safe and low-cost electric supply and services to their communities in an efficient and effective manner. Shared costs and mutual support make the effort manageable and provide an effective interface to the ever-growing complexity of the electric power supply industry.

Municipal Finance Corporation

In Nova Scotia, Municipal energy utilities are regulated by the Nova Scotia Utility and Review Board. Pursuant to the Public Utilities Act, the Utility and Review Board exercises general supervision over all electric utilities operating as public utilities within the Province. This authority includes setting rates, tolls, charges, and regulations for the provision of service and approval of capital expenditures in excess of \$250,000. Debt incurred by a municipal utility through the Municipal Finance Corporation, must be guaranteed by the municipality and is reviewed by the province on a case-by-case basis. A business case, third party consultant reports to validate risks and assumptions, as well as required reserve funds are reviewed for borrowing consideration.

User Fees

Property Assessed Clean Energy (PACE) financing programs allows homeowners to finance energy efficiency, renewable energy and other eligible improvements on their buildings using private sources of capital. PACE programs are enabled through legislation and authorized at the local government level. Municipalities may directly administer residential PACE programs, or via public-private partnerships with one or more PACE administrators.

Two PACE programs are operating in Bridgewater: (1) Clean Energy Financing, financed through a municipal Local Improvement Charge via a Municipal Finance Corporation loan and secured through a property lien. (2) The Clean Net Zero pilot project is administered by Clean Foundation and financed in part through the Municipal Finance Corporation and in part through the LaHave River Credit Union. Both promise a 1:1 savings-to-debt ratio, to ensure that the homeowner remains cashflow neutral or positive.

It is envisioned that property owners enrolled in the energy poverty reduction program will incur some of the retrofitting costs. Whether this is through the aforementioned amortizing PACE structure, or simply an up-front contribution is still to be determined.

Financial Investment Vehicle

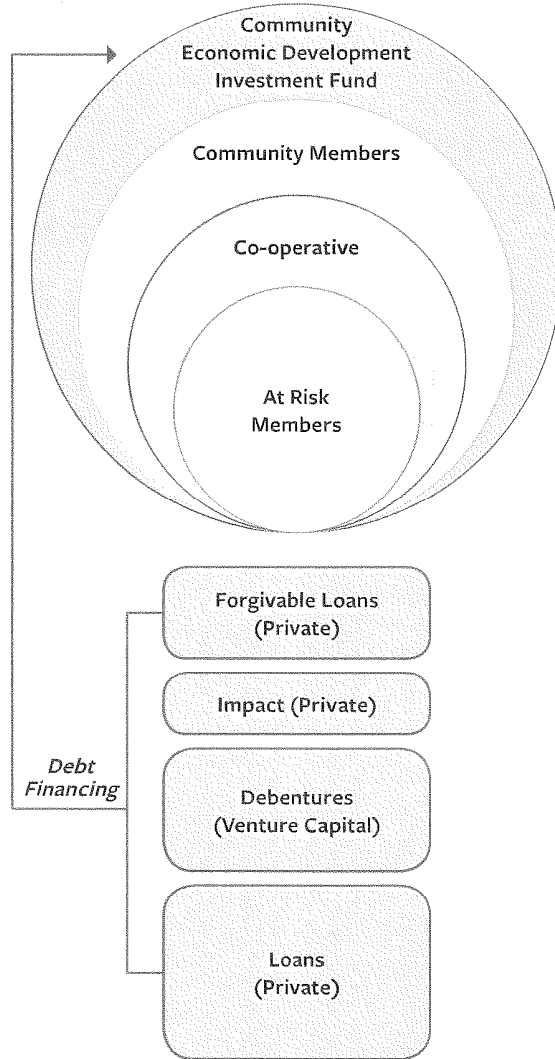


Diagram 9.3

Conclusion

The Municipality will act as the administrator of the 4 streams of funding and the collective activities and responsibilities create the foundation of the municipal capitalization system.

FINANCIAL INVESTMENT VEHICLE

An engine external to the municipality, not restricted to the Municipal Government Act, is required to exploit traditional and community forms of financing. To maximize the benefits of this structure, the Town will include a community-favouring organizational governance structure to allow for at-risk participation and community investments. The three major components to the traditional and community Financial Investment Vehicle are:

1. Community Economic Development Investment Fund (CEDIF)
2. Co-operative (Co-op)
3. Traditional Financing Sources

Community Economic Development Investment Fund (CEDIF)

CEDIFs are pools of capital which is raised from individuals through the sale of shares by for-profit entities to invest in projects. CEDIFs provide a mechanism for accessing local capital so that residents can directly invest in their communities. CEDIFs have had a history of success, a strong legal and regulatory framework paired with considerable

support from the Province of Nova Scotia. This community-centric entity will allow for community members to participate in local infrastructure investments. This entity is the cornerstone mechanisms that will secure traditional forms of financing (debt), community financing (equity) and is structured to be the parent company of a co-operative.

Co-operative (Co-op)

A Co-op, such as an owner's co-op, will own a determined number of shares within the CEDIF entity. At-risk community members will be provided with co-op memberships and shares in the co-op. This set-up allows for this often-forgotten sub-section of the community to be given a voice through the democratic nature of a co-op. If carefully structured, the at-risk demographic will also receive dividend disbursements as a result of share-ownership through energy savings incurred through the energy poverty reduction program. That is, whatever is remaining after other financing proponents are paid their pre-determined dividends and interest/principal contractual obligations.

Traditional Financing Sources

The CEDIF will secure debt through traditional funding sources including, but not limited to, forgivable loans, impact investors, venture capital debentures, and traditional loans such as long-term-debt financing.

Conclusion

The CEDIF will act similar to that of a special purpose vehicle, although it will not be considered a municipal arm's length entity. Securing traditional financing while allowing for community investments and at-risk participation create the foundation of financial investment vehicle.

INVESTMENT SYSTEM ACTIVITIES

Diagram 9.4 displays the dynamic activities of the Investment System, providing an

overview of the 4 major investment handling stages: planning, intake, delivery, and output as summarized below.

Planning

- **ID projects:** The Town's Energy Management Information System identifies investible community energy system and houses energy management system portfolios.
- **Data Sharing - Energy Management Information System, Municipal**

Capitalization System: The Energy Management Information System shares portfolio data with the Municipal Capitalization System, which refines this information to source capitalization streams.

- **Agreements Procured:** The Municipal Capitalization System determines the best-value coupling of specialized and municipal funding streams and approaches these proponents to secure agreements, both long and short term.
- **Data Sharing - Municipal Capitalization System, Financial Investment Vehicle:** The Municipal Capitalization System shares project financing requirements with the Financial Investment Vehicle.
- **Institutional Prospectus:** The Financial Investment Vehicle generates institutional prospectuses and signs contracts with traditional investors whom provide the best value for the Town.
- **Community Prospectus:** The Financial Investment Vehicle generates a CEDIF prospectus with terms that aligns with the Town's needs yet is attractive to community investors.
- **As Risk Shares:** Co-op and membership shares are issued to at-risk community members participating in the Energy Poverty Reduction program.

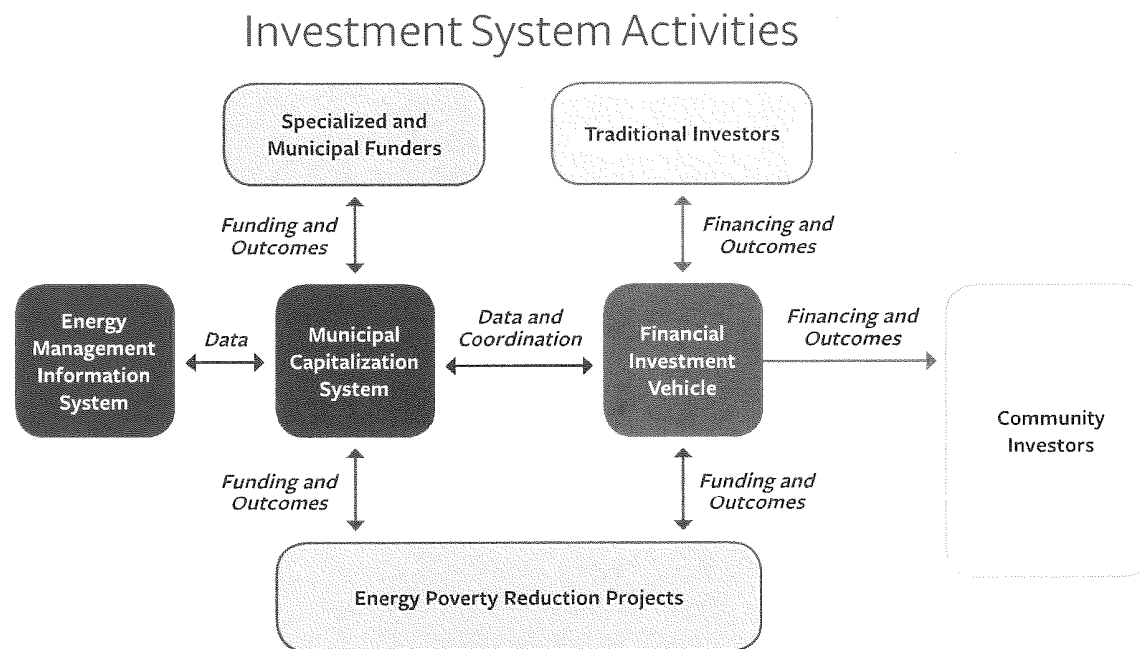


Diagram 9.4

Intake

- **Funding and Contributions:** The Municipal Capitalization System receives funding and resource contributions from specialized and municipal funders.
- **Institutional Investments:** Institutional investments flow to the Financial Investment Vehicle from a variety of traditional investor sources with specified terms attached.
- **Community Investments:** CEDIF investments flow from the community investors to the Financial Investment Vehicle.
- **Data Sharing - Financial Investment Vehicle, Municipal Capitalization System:** The Financial Investment Vehicle and the municipal capitalization system share funding contributions with one another.
- **Data Sharing - Municipal Capitalization System, Energy Management Information System:** The Municipal Capitalization System shares cumulated funding information with the Energy Management Information System to match funding to initial requirements.

Delivery

- **Data Sharing - Energy Management Information System, Municipal Capitalization System:** The Energy Management Information System and the Municipal Capitalization System confirm capitalization costs match procured funding.

• Data Sharing - Municipal Capitalization System, Financial Investment Vehicle:

The Municipal Capitalization System confirms funding distribution requirements with the financial investment vehicle.

- **Funding:** Both the Municipal Capitalization System and the Financial Investment Vehicle contribute their pre-determined funding amounts to the Energy Poverty Reduction systems, whereby there is no return on investment on management systems, a marginal return on investment on mobility systems, and a significant return on investment on community energy and housing energy management systems.

• Data Sharing Energy Poverty Reduction Systems, Energy Management Information System:

Energy Poverty Reduction program outcomes flow to the Energy Management Investment System, which tracks performance results.

Outputs

- **Data Sharing - Energy Management Investment System, Municipal Capitalization System:** Energy Management Investment System performance and outcome data is shared from the Energy Management Information System to the Municipal Capitalization System.
- **Reporting, Energy Savings and Profit:** The Municipal Capitalization System reports

outcomes to funders on a pre-determined schedule as outlined in contractual agreements. Energy saving are reconciled with applicable proponents such as Energy Service Companies.

• Data Sharing - Municipal Capitalization System, Financial Investment Vehicle:

The Energy Poverty Reduction system performance and outcome data is shared from the Municipal Capitalization System to the Financial Investment Vehicle.

- **Reporting and Institutional Disbursements:** The financial investment vehicle disburses interest and principal payments accompanied by any outcome reporting requirements defined in the executed contracts.

- **Reporting and Community Dividends:** The Financial Investment Vehicle issues dividends and tax statements to CEDIF investors. Any additional revenue is passed through the CEDIF to the at-risk co-op members and shareholders.

HIERARCHY OF SENIOR AND SUBORDINATED RESOURCES

In the event that any component of the Energy Poverty Reduction Program defaults, it is important to determine the seniority of capital. Although it is too early in the investment design phase to define orders of subordinated debt, some generalizations can be made. For example,

charitable and senior government bodies would have no expectations if the projects are to default, while debentures such as venture capital would expect default disbursements prior to forgivable private loans. These details will be outlined in all funding agreements and are to be presented in an identical manner from one parties' prospectus to another.

INVESTMENT SYSTEM CONCLUSION

The Investment System relies heavily on accurate data flows, meticulous contract negotiations, and timely cash disbursements. If diligently integrated with connected technologies, there would be fluidity with dataflows that would enable this cyclical engine to allow for sustainable project development. Although certain components, such as CEDIFs, are region specific, it is possible to substitute this tool with one found in similar jurisdictions. For example, community bonds could provide the community financing component

of this model in Ontario. Finally, in detailing the system's characteristics, one must consider the best accounting practices for each component and ensure all nodes are able to share data compatibly, and without delay, from one party to another.

USE OF FINALIST GRANT

Our community greatly appreciates having been awarded \$250,000 through the Smart Cities Challenge Finalist Grant. The grant has allowed us to achieve program design innovations that would otherwise simply not have been possible. The proposed use of the finalist grant, from our original application, is described in Table 9.14.

The Town intended to leverage \$250,000 of grant funding with \$54,000 in in-kind support (through staffing) to achieve a total project value of \$304,000. Following the completion of the Final Application, the revised use of finalist grant can be viewed in Table 9.15.

Variances between the budgeted use of the Smart Cities Challenge Finalist Grant and projected actual costs are explained as follows:

- **Priority 1:** underspent by \$17,054 as capacity building costs were shifted from contract work to in-kind work (staffing). Reflected in increased in-kind contribution for this priority area.
- **Priority 2:** overspent by \$20,031 due to a greater level of community engagement activity than originally envisioned, including the production of youth-at-risk documentary on the subject of energy poverty, and a robust communications strategy.
- **Priority 3:** overspent by \$26,522 due to a greater need for technology, data flow, and privacy impact assessment than originally anticipated. In-kind costs (staffing) were captured under priority 1.
- **Priority 4:** underspent by \$30,410 due to a lower need for professional resources (legal counsel, consultants) for project partner engagement. Budget set aside for partnership contract development was unused. In-kind costs (staffing) were captured under priority 1.
- **Priority 5:** overspent by \$911 due to higher than anticipated professional costs in developing the Final Application. In-kind costs (staffing) were captured under priority 1.

Proposed Use of Finalist Grant for Initial Application

Priority Area Capitalization Source	Smart Cities Finalist Grant	Town of Bridgewater In-Kind	Total Value
Priority 1: increase capacity & knowledge	\$50,000	\$20,000	\$70,000
Priority 2: engage community	\$45,000	\$7,000	\$52,000
Priority 3: refine approach to technology & data	\$65,000	\$5,000	\$70,000
Priority 4: refine service delivery approach	\$85,000	\$20,000	\$105,000
Priority 5: create final proposal	\$5,000	\$2,000	\$7,000
Total	\$250,000	\$54,000	\$304,000

Table 9.14

\$ FINANCIAL

Actual Use of Finalist Grant

Priority Area	Smart Cities Challenge Finalist Grant				In-Kind Contributions			Total Value
	Consultants	Resources	Staffing	Sub-Total	Town of Bridgewater	External Partners	Sub-Total	
Priority 1: increase capacity & knowledge		\$6,050	\$26,896	\$32,946	\$45,156		\$45,156	\$78,102
Program staffing			\$26,896	\$26,896	\$45,156		\$45,156	\$72,052
Energy poverty research contracts for local organizations		\$6,050		\$6,050				\$6,050
Priority 2: engage community	\$48,621	\$16,410		\$65,031		\$7,000	\$7,000	\$72,031
Honoraria participants in interviews and focus groups		\$2,500		\$2,500				\$2,500
Community-wide paper survey		\$5,748		\$5,748				\$5,748
Communications Plan development and implementation	\$23,621	\$1,872		\$25,492				\$25,492
Youth video documentary	\$17,000			\$17,000		\$7,000	\$7,000	\$24,000
Hosting public events		\$6,290		\$6,290				\$6,290
Facilitation support for interviews, focus groups and events	\$8,000			\$8,000				\$8,000
Priority 3: refine approach to technology & data	\$91,522			\$91,522				\$91,522
Project consultant - data & connected technologies	\$44,217			\$44,217				\$44,217
Project consultant - preliminary Privacy Impact Assessment	\$23,543			\$23,543				\$23,543
Project consultants - energy, cost, and emissions modelling support	\$23,762			\$23,762				\$23,762
Priority 4: refine service delivery approach	\$30,940		\$23,650	\$54,590				\$54,590
Project consultant - evaluation	\$1,740			\$1,740				\$1,740
Project consultant - project development and capitalization	\$29,200		\$23,650	\$52,850				\$52,850
Priority 5: create final proposal	\$5,911			\$5,911				\$5,911
Final application editing	\$2,000			\$2,000				\$2,000
Final application layout	\$3,911			\$3,911				\$3,911
Total	\$176,993	\$22,460	\$50,546	\$250,000	\$45,156	\$7,000	\$52,156	\$302,156

Table 9.15 Note: all dollar figures include municipal net of HST. Note also that due to the ongoing costs associated with completing the final application, and the time required to receive and process invoices, project costs reported in this table are projections up to March 31, 2019. Actual expenses will be available after that date.

APPENDIX: LETTERS OF SUPPORT

The Town of Bridgewater received letters of support from the following people and organizations for our Smart Cities Challenge Finalist application:

- | | |
|---|---|
| 1. Affordable Energy Coalition | 21. Nova Scotia Health Authority |
| 2. Affordable Housing Association of Nova Scotia | 22. Nova Scotia Power |
| 3. Be the Peace Institute | 23. Nova Scotia Works |
| 4. Big Brothers, Big Sisters of South Shore | 24. Nova Scotia Community College – Lunenburg Campus |
| 5. Bridgewater Active Transportation Advisory Committee | 25. Quality Urban Energy Systems of Tomorrow |
| 6. Bridgewater and Area Lions Club | 26. RNDT Development |
| 7. Clean Foundation | 27. SchoolsPlus |
| 8. Dalhousie University - Faculty of Computer Science | 28. Second Story Women's Centre |
| 9. Ecology Action Centre | 29. Small World Learning Centre |
| 10. Efficiency Nova Scotia/EfficiencyOne | 30. Society St. Vincent de Paul |
| 11. Energy Services Association of Canada | 31. Souls Harbour Bridgewater |
| 12. Family Services of Western Nova Scotia | 32. South Shore Family Resource Association |
| 13. Green Power Labs | 33. South Shore Housing Action Coalition |
| 14. Housing Nova Scotia | 34. St. Mary's University - Department of Mathematics and Computing Science |
| 15. Lunenburg County Seniors Safety Program | 35. The Ark and Support Services Group |
| 16. Lunenburg County YMCA | 36. The Honourable Mark Furey, MLA Lunenburg West |
| 17. Halifax Regional Municipality | 37. The Honourable Steven McNeil, Premier of Nova Scotia |
| 18. New Dawn Enterprises Limited | 38. The Salvation Army, Bridgewater Corps |
| 19. Nova Scotia Community Transportation Network | 39. TownSuite Municipal Software |
| 20. Nova Scotia Department of Energy and Mines | 40. United Way Lunenburg County |

These letters are appended in alphabetical order as presented above.



Association of Community
Organizations for Reform Now
(ACORN)

Adsum for Women and Children

Antigonish Emergency Fuel Fund

Antigonish Women's Resource
Center

Community Advocates Network

Community Society to End Poverty

Dalhousie Legal Aid Service

Ecology Action Centre

Every Woman's Centre, Sydney

Face of Poverty Coalition

North End
Community Health Centre

Nova Scotia Public Interest Research
Group

Society of Saint Vincent de Paul

Transition House Association of Nova
Scotia

Women's Centres Connect!

2209 Gottingen St.

Halifax NS B3K 3B5

902-454-1656 t

or 902.423.8105 t

902.422.8067 f

February 22, 2019

Privy Council Office
Attn: Impact and Innovation Unit
Room 1000,
85 Sparks Street
Ottawa, Ontario K1A 0A3

Re: Support for Town of Bridgewater Smart Cities Challenge Finalist
Application

To the Smart Cities Challenge jury panel,

This is a letter confirming the full support and confidence of the
Affordable Energy Coalition in the Town of Bridgewater to implement its
Energy Poverty Reduction Program as a Smart Cities Challenge Finalist.

Section 1:

The Affordable Energy Coalition

The Affordable Energy Coalition is a group of Nova Scotian organizations
and individuals whose mission is to work with community groups, the
non-profit sector, government and business to

1. Ensure universal access to electricity;
2. Eradicate fuel poverty in Nova Scotia;
3. Represent the interests of low-income Nova Scotians

regarding energy issues.

The Affordable Energy Coalition advocates for better electricity
regulation and for better efficiency programs to help low income
households with their "energy burden", the percent of their income they
spend on energy.

Energy poverty impacts on Bridgewater residents

Energy poverty has a vital impact on the 40% of Nova Scotians with the
lowest incomes throughout the province and especially the lowest 20%,
including in Bridgewater. A household is in energy poverty when it
spends more than 6-8% of its income on electricity and heat (*or 10% of
its income on household and transportation energy*). In 2011 (the latest
figures available) the lowest quintile of Nova Scotian households (about
78,000 households) spent an average of 11.8% on home energy
compared to the average among all NS households of only 3.8% of
income. The second lowest quintile spent an average of 6.6%. This
means that most of the lowest quintile experience energy poverty and
many in the 2nd lowest do as well.

Recent research has also demonstrated that about 55% of low income Nova Scotian households are renters. It is important that renters be assisted as well as homeowners to effectively address energy poverty.

In our advocacy, we at AEC view energy poverty from a human rights perspective.

The NS Human Rights Act Section 5 (1) titled "Prohibition of discrimination", says: **No person shall in respect of (a) the provision of or access to services or facilities.... discriminate against an individual or class of individuals on account of**

- (h) age;
- (i) race;
- (j) colour; ...
- (m) sex;
- (o) physical disability or mental disability; ...
- (q) ethnic, national or aboriginal origin;

Electricity services and heating as a service derived from other energy sources are vulnerable to cutoff due to unpaid bills associated with low incomes and energy poverty, disproportionately affecting individuals in the above categories. This amounts to a violation of the human rights of those individuals, contrary to NS law.

We also see energy poverty as one of the social determinants of health. Improved energy services for low income households improves health outcomes by reducing excruciating choices between paying for heat and power vs. food or medicine. Improved energy services also lead to more comfortable homes and lives.

Resources AEC puts into energy poverty reduction in Bridgewater:

Members of the AEC work directly with low income Nova Scotians to help them with arrears and electricity disconnections and to prevent such problems from occurring, including in Bridgewater.

Our advocacy led to approval of 2 pilot programs operated by Efficiency NS to encourage landlords serving low income households to substantially improve the energy efficiency of their buildings. We continue to play a lead role in helping to make those pilot programs a success. Both pilots are now expected to become permanent programs in the near future. They are and will be available to landlords serving low income households in Bridgewater just as in other parts of the province.

Bridgewater's Energy Poverty Reduction Program

The value of Bridgewater's proposed comprehensive approach cannot be overstated. It would ensure that Bridgewater tenants receive the full benefits of the 2 province wide rental efficiency programs that we have helped to set up. It would facilitate our volunteer work aimed at making these programs successful.

The coordinated access system, household navigator and technical navigator are best practices that research has shown are required to secure the participation of low income households and of landlords serving low income tenants, who often struggle with financial and organizational capacity.

Low income households that AEC serves in Bridgewater would be enabled to participate in efficiency programs that would otherwise be beyond their financial or organizational capacity.

The savings that this proposal will engender will reduce the likelihood of low income households facing emergency loss of heat or power, which leads to many additional problems. Reduced energy costs make households far less prone to "heat or eat" dilemmas, in which households must at times choose between healthy food and heat and power – or medications and heat and power. Retrofits also make homes more comfortable. In all of these ways, improved energy services will improve the health of the low income population in Bridgewater.

Bridgewater's Consultation efforts

As a provincial organization we have not directly participated in Bridgewater's local community consultations. However we have provided our views and information to Bridgewater staff in direct communications with them.

Our members have years of community development experience and the Town's multiple avenues of local consultation have been admirable and consistent with our understanding of good practice in engaging low income and marginalized households in their design of the Energy Poverty Reduction Program.

Section 2:

Collaboration among community organizations and landlords in Bridgewater as well as the Town's community services and energy technical advisory service will ensure low income residents secure the help they need both with immediate solutions to energy bills they cannot afford and longer term solutions to reduce those bills to an amount they can afford. This will reduce the likelihood that a household will only benefit from limited actions taken independently by the various service providers and will reduce the chances of low income households "falling through the cracks" and continuing to experience energy poverty problems. Working relations among all the providers will improve as staff and volunteers work together more frequently. If low income households receive the type of help they can really benefit from, their lives will improve. In a small way, the Coalition encourages just such collaboration but the Town's proposal will be much more comprehensive and pragmatic at the local level.

Sharing information through data collection and connected technology will facilitate the collaboration described above; will enable more ideas and actions to assist with transportation to be generated, tested and implemented; and will enable landlords to gradually improve their energy management and tenant cooperation as technical

solutions are implemented. Building management and tenant behaviour have a big impact on energy savings as well as comfort and overall satisfaction.

One of the most exciting things about this model is that after it has been developed and refined in practice, it will be usable by other NS communities and communities across the country.

This proposal is in keeping with Bridgewater's long term energy vision and ongoing energy efficiency and renewable efforts which have already paid off with large savings and have built a solid reputation for Bridgewater around NS. The Town of Bridgewater recently received the national Small Municipal Trailblazer award at the 2018 Globe Climate Leadership Awards for reducing the town's energy use by 23%. The Community Energy Investment Plan that was approved by the town in January 2018 shows a comprehensive far sighted approach to continued energy efficiency and innovation. We believe these 2 events demonstrate a very effective team is in place in Bridgewater who we have full confidence in. Leon De Vreede's leadership is a vital component of this.

Section 3:

The 3 outcomes that are most aligned with the Affordable Energy Coalition's goals are the central one of reducing energy poverty in Bridgewater; influencing provincial policy and programs to further support energy poverty reduction efforts; and inspiring other communities to adopt what is successful in Bridgewater.

We will work persistently in pursuit of these goals by

1. working with Efficiency NS and the NS Department of Energy to further develop their rental efficiency programs for landlords serving low income households;
2. encouraging them to experiment with high performance energy retrofit programs for low income rental buildings, including investigating the possibility of a creating an Energie Sprong system in NS (based on a Dutch program of that name);
3. encouraging them to improve standards for efficiency in new low income housing to the point where all new low income rental housing is net zero energy; and
4. encouraging the province to adopt a Universal Service Program approach to energy poverty, which would ensure that after retrofits have been done, costs are subsidized so that household's energy costs are limited to 8% of income, excluding transportation costs, as has been pioneered in the US, in Ontario and in a small way by one of our members in Antigonish.

Bridgewater would be the perfect place for the province to test some of these ideas in cooperation with the Energy Poverty Reduction Program.

Practically, we can offer assistance in how best to work with landlords in implementing energy retrofits. We expect the rental efficiency pilot programs operated by Efficiency NS to create a very useful, detailed template in how best to work with the varying kinds of landlords that serve low income households.

Jurisdictions across North American have grappled with how best to work with landlords given the “split incentives” between landlords and tenants. Efficiency NS’ pilot rental programs are leading edge in creating innovative, detailed solutions to this problem. Bridgewater’s proposal is well thought out and in keeping with best practices in working with low income households and landlords.

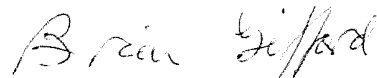
We can also offer advice on how to improve financial assistance to low income households to reduce the likelihood of repeated loss of energy services on an emergency basis.

AEC will pursue all of these initiatives in keeping with our goal of improving the provision of essential energy services as a human right.

Conclusion:

The Affordable Energy Coalition has formally approved supporting this application and playing a role in helping the Town’s efforts in reducing energy poverty. We are excited by the prospect of assisting with Bridgewater’s initiative. Winning the Smart Cities Challenge grant would be a vital step toward fulfilling Bridgewater’s enlightened goal of reducing energy poverty in their community. We look forward to working with them on this goal.

Yours sincerely,



Brian Gifford

Chair

Affordable Energy Coalition





AFFORDABLE HOUSING
ASSOCIATION OF NOVA SCOTIA

February 26th, 2019

Privy Council Office
Attn: Impact and Innovation Unit
Room 1000
85 Sparks Street
Ottawa, Ontario K1A 0A3

Re: Support for Town of Bridgewater's Smart Cities Challenge Finalist Application

To the Smart Cities Challenge Jury,

This is a letter confirming the full support and confidence of the Affordable Housing Association of Nova Scotia (AHANS) in the Town of Bridgewater to implement its Energy Poverty Reduction Program as a Smart Cities Challenge finalist.

Our organization has been administering Service Canada's Homelessness Partnering Strategy funding in rural Nova Scotia since 2013. In our work with local service providers who support the homeless and other vulnerable populations find and sustain affordable housing and in upgrading, we have come to understand that success in ending homelessness will be dependent on being inclusive, multi-sectoral and multi-disciplinary.

Our organization is becoming increasingly aware of the impacts that energy poverty has on households in Nova Scotia. In our work we hear recurring stories of unpayable energy bills resulting in housing insecurity. The local support organizations we work with are routinely called upon to aid in paying off energy bill arrears so that individuals can remain in their home, or that homeless individuals can be successfully rehoused. For this reason, ensuring energy security of Nova Scotians is key to solving widespread housing challenges.

AHANS is responsible for the management of the HIFISNS Network. The Homeless Individuals and Families Information System (HIFIS) software is owned by Service Canada which shares it nationally with communities to assist services delivery agencies track and report on their effort to house and support vulnerable households; those homeless or at risk of being homeless. AHANS has an agreement with Service Canada to use the software and Canada Web Hosting is our HIFISNS Network host.

We would like to express our full support for the Town of Bridgewater to utilize the HIFIS data platform, and our associated HIFISNS Network, for their proposed Coordinated Access System. The Town's work will be well-supported by an active network of local partners and their existing Community Hub which

Suite 221A 6169 Quinpool Road
Halifax NS B3L 4P8
902-406-3274

will be an effective precursor to the creation of a full Coordinated Access System. Several local organizations partnering with the Town on the Smart Cities Challenge project are already part of the HIFISNS Network. The increasing trend of HIFISNS implementation is essential in using data and connected technology to reinforce service organization collaboration and empower those who are most underserved. AHANS is a proponent of the adoption of HIFISNS in rural settings and views it as an effective way to ensure broad spectrum access to community services for underserved populations.

Bridgewater's decision to use a Coordinated Access System model with HIFISNS software ensures the transferability of the program to communities across Canada, particularly in underserved rural areas. Our organization is interested in providing several forms of support for Bridgewater's Coordinated Access System including administrative assistance in mapping out system partners and services, sharing our learnings from the use of HIFIS, and aiding in data analysis and evaluation.

Our organization is highly supportive of Bridgewater's vision to reduce energy poverty and is excited to commit to partnering with the Town in their implementation of an innovative Energy Poverty Reduction Program.



J. D. Graham
Executive Director

Suite 221A 6169 Quinpool Road
Halifax NS B3L 4P8
902-406-3274



Be the Peace Institute

PO Box 459 Mahone Bay, N.S. B0J 2E0 902 624-8011

www.bethepeaceinstitute.wordpress.com

February 20, 2019

Privy Council Office
Attn: Impact and Innovation Unit
Room 1000
85 Sparks Street
Ottawa, Ontario K1A 0A3

Re: Support for Town of Bridgewater's Smart Cities Challenge Finalist Application

Dear Smart Cities Challenge Jury:

Please accept this letter in support of the Town of Bridgewater's application to the Smart Cities Challenge. Bridgewater has been not only an early adopter, but a leader in Nova Scotia and Atlantic Canada in considering renewable energy for both its town properties, and also its residents. As one of the few growing towns in rural Nova Scotia, this innovative approach has drawn widespread recognition and excitement. There is no question in our minds, with the human and social capital and level of expertise Town personnel have developed in this area, that they will be successful in implementing the town's Energy Poverty Reduction Program as a Smart Cities Challenge finalist.

Our organization is a community based non-profit serving Lunenburg and Queens Counties, focused on addressing gender-based violence. We know that when women leave an abusive relationship they often find themselves in dire financial straits and insecurity of many kinds, (housing, energy, food) and even more so if they have children. We also know that for many people in rural communities, especially without a consistent and comprehensive public transportation system, underemployment is an issue. Even full-time employment at minimum wage leaves many in energy and housing poverty. With aging and inadequate housing stock, this puts many people at risk for health and mental health issues, conflicts with the law, and homelessness.

Bridgewater's Energy Poverty Reduction Program will be of incredible value to this almost 40 % of our population who live at risk, offering so many more options for those most vulnerable, including children and youth who may fall through the cracks of traditional systems.

The Town has made a truly remarkable and successful effort at consultation as part of their community engagement strategy and Energy Poverty Research Program, effectively including both the direct voices of the most vulnerable people living in energy and housing poverty, and also the dedicated service providers who help them grapple with the daily challenges of survival. Our residents have been extremely forthcoming about their struggles and hopes through interviews, focus groups and a community video. Many of the stories are quite simply, heartbreaking. All the voices and perspectives have contributed to the design of a responsive Energy Poverty Reduction Program that has the potential to address, in innovative ways, a wide range of very serious needs.

Through the consultation process it has become clear that services need to be integrated, collaborative across silos, accessible and non-judgmental in order to truly serve those most in need. The process has unearthed the bright lights in our communities who are already doing great service work, and the potential for partnerships to offer wrap-around services to people with complex challenges. The Town of Bridgewater's contribution to the vision of energy and housing sustainability and health through data and connected technology, will strengthen community partnerships and empower those most at risk. We believe it is an exciting model, replicable in other jurisdictions, especially rural communities facing similar challenges. There is a great deal of community pride in Bridgewater's leadership and expertise in innovating for local solutions to the housing and energy crises faced by many, not only here, but across Canada. And we know the ripple effects of the Energy Poverty Reduction Program will greatly enhance the quality of life here on the South Shore for everyone.

We believe what the Town of Bridgewater is doing to address these social and environmental issues is a stellar example of a can-do, will-do attitude so desperately needed in our world. We are proud of the effort and will continue to partner in any way we can to contribute to its success.

With unwavering support,
Sue Bookchin, MPH, BSN

Sue Bookchin

Executive Director
Be the Peace Institute



Big Brothers Big Sisters

February 21, 2019

Privy Council Office
Attn: Impact and Innovation Unit
Room 1000
85 Sparks Street
Ottawa, Ontario K1A 0A3

Re: Support for Town of Bridgewater's Smart Cities Challenge Finalist Application

To the Smart Cities Challenge jury panel,

This is a letter confirming the full support and confidence of Big Brothers Big Sisters of South Shore in the Town of Bridgewater to implement its Energy Poverty Reduction Program as a Smart Cities Challenge finalist.

Big Brothers Big Sisters of South Shore provides quality mentoring programs to children and youth in Lunenburg and Queens Counties, Nova Scotia, and we centrally located in the town of Bridgewater. By pairing young people with supportive role models, we help to improve their wellbeing, overcome obstacles, and find future success. Our participants come largely from low-income households and families who might struggle financially or socially; through our work we recognize the urgency of energy poverty and the harmful effects it can have on families, children, and the community as a whole, and we fully support the development of the Energy Poverty Research Program for this reason.

In developing this Program, the Town has worked hard to break down silos, connect community groups and services, and include marginalized voices in each discussion. Local groups, particularly those who work with vulnerable populations and those directly affected by energy poverty, have been included in every step of the project. In developing ideas for local energy solutions, the Town has worked closely with residents, businesses, nonprofit organizations, educational institutions, and other government agencies, and has demonstrated its commitment to shared and community-led initiatives for poverty reduction. Through interviews, focus groups, surveys, and other methods of data and story collection, the Town has been able to hear the voices of groups historically left out of important discussions, which is an important and empowering aspect of the Energy Poverty Research Program.

Through each of its outcomes, a community-wide energy poverty initiative will change the lives of Bridgewater residents. We feel that one of the largest barriers for many families is knowledge of available resources and the challenge of connecting with them; the proposed Coordinated Access System, however, will drastically improve this issue as families will get quick access to help, simple communication, and ease of navigation through a coordinated system. This outcome affects lives in a wide variety of ways, as knowledge and access are truly key to overcoming the barriers faced by vulnerable populations. Coordinated access will lead to improved housing conditions, improved mobility, new economic opportunities, and empowerment of marginalized groups; there is no end to the number of societal improvements that can be made through this Program, and we are supportive of each of the outcomes outlined in the program plan.

Big Brothers Big Sisters of South Shore is confident in the Town's vision to reduce energy poverty. We believe that this program will translate to life-changing impacts on the lives of Bridgewater residents, Nova Scotians, and ultimately all Canadians, and we are excited to be part of this outstanding initiative.

Sincerely,

Jennifer Meister
Acting Executive Director/Mentoring Coordinator
Big Brothers Big Sisters of South Shore

821 King Street Unit 7, Bridgewater, NS, B4V 1B7

start something

Bridgewater Active Transportation Advisory Committee

February 26, 2019

**Privy Council Office
Attn: Impact and Innovation Unit
Room 1000
85 Sparks Street
Ottawa, Ontario K1A 0A3**

Re: Support for Town of Bridgewater's Smart Cities Challenge Finalist Application

To the Smart Cities Challenge jury,

This is a letter confirming the full support and confidence of Bridgewater Active Transportation Advisory Committee in the Town of Bridgewater to implement its Energy Poverty Reduction Program as a Smart Cities Challenge finalist.

Our committee is a standing committee of the Town of Bridgewater, comprised of various town denizen volunteers, town staff and stakeholder organizations, including members from the Nova Scotia Health Authority, School Advisory Councils, the Department of Communities, Culture and Heritage, the larger Municipality and local business. Our mandate is to support and advise the Town in its efforts to become an active transportation-supportive community, including putting an AT lens on town infrastructure, programs, policy and projects in building an environment and increasing partnerships promoting AT. Active transportation for us includes encouraging a paradigm shift toward choosing methods other than single vehicle use to access our beautiful town, including more walking, biking and use of public transit. This in turn, improves our fitness and health, while reducing pollution and automobile congestion.

Energy poverty impacts Bridgewater residents by inhibiting access. Those residents who face the financial consequences of having to choose between paying for adequate household warmth and other necessities are significantly disadvantaged. They in turn can often not afford methods of transportation to access shopping, medical appointments and education facilities, and are further disadvantaged, often failing to maintain job security. It becomes a systemic cycle of hindrance with far reaching inequitable consequences, including declining health and unemployment.

Several of our committee members were pleased to have participated in the Town's consultation efforts in preparation for the Smart Cities Challenge grant application. Not only did participation provide the opportunity to learn how multifaceted is this issue, but it also inspired by sharing the dedication many individuals and groups have to unravelling the inequitable effects energy poverty has upon our citizens. The success of this project will come from a multi-disciplinary approach, involving people and groups with many varied circumstances and backgrounds. Certainly, the Town's many meetings and workshops coordinated for the Smart Cities Challenge have demonstrated the benefits of involving a diversity of voices so that many perspectives are represented in addressing solutions. As many can attest, it is wonderful to have an altruistic vision of how great it would be..., but practical solutions require coordinated efforts, and without synchronization, often well-intended efforts can work at cross-purpose to others equally well-intentioned. The committee is confident that the Town's program design with a coordinated access system will address this and provide the important navigation to best facilitate the access to programs required of our citizens most in need.

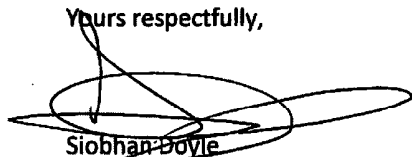
Page 1 of 2

Our committee believes an approach to active transportation is a key component to improvement of lifestyle overall. We agree that it is particularly important that the Town has included in its outcomes for the Smart Cities Challenge the improvement of residents' mobility, which in turn is directly related to improving access to community services. Isolation is significantly detrimental to the health of individuals, families and communities. The seemingly simple fact of getting out and about, seeing your neighbours and enjoying interacting with others in the community leads to a vitality and a cooperative spirit which strengthens us all. From a practical perspective, improved mobility is equally important in regards to obtaining the necessities of living well, such as getting groceries, attending medical appointments, taking children to school and maintaining employment. Our committee is keen to continue aiding our Town in these regards.

We are convinced that by reducing the limiting factor of energy poverty from the equation, we will experience greater success in generating a paradigm shift, encouraging a culture of normalizing active transportation as the preferred method of enjoying travelling within our community and larger environment. It is an exciting time to live in Bridgewater with such a momentum afoot. The Town is developing a plan which will not only benefit us, but can be easily mirrored in other communities, from villages to urban settings, from Canada to the world.

We hope you agree.

Yours respectfully,

A handwritten signature in black ink, appearing to read 'Siobhan Doyle', written over a horizontal line.

Siobhan Doyle
Chair

Bridgewater Active Transportation Advisory Committee.

Bridgewater and Area Lions Club
1787 Hwy 10, West Northfield
NS B4V 5C1

February 27, 2019

Privy Council Office
Attn: Impact and Innovation Unit
Room 1000
85 Sparks Street
Ottawa, Ontario K1A 0A3

Re: Support for Town of Bridgewater's Smart Cities Challenge Finalist Application

To the Smart Cities Challenge jury,

This is a letter confirming the full support and confidence of *[your organization's name]* in the Town of Bridgewater to implement its Energy Poverty Reduction Program as a Smart Cities Challenge finalist.

The Bridgewater and Area Lions Club serves the residents of the town of Bridgewater and surrounding communities. Like all Lions Clubs we work to improve the lives of community members and meet their needs as requested. We have been active in this community since 1956. We have noted a sharp increase in the number of requests for assistance with heating oil and electrical heating costs. We have had to increase our budget line for this area to meet this increase which impacts all areas of the lives of our community members who seek our support.

The Energy Poverty Reduction Program illustrates the need for more of our citizens to be able to adequately heat their homes. This winter has been extremely cold and taxes our ability to provide for the needs of those who contact us. We hear stories of families who have run out of oil and are heating their homes by turning on their electric ovens, which of course drives up their electrical bills, thus impacting their ability to purchase heating fuel.

Any reduction in the need to provide funding for heating would allow us to assist our families with other requests such as groceries, medical supplies and trips to hospitals for treatment, rental assistance, clothing and many other needs. Families need to know that they can comfortably heat their homes. Many of our clients have low, or inadequate incomes which fail to provide for their energy needs. The available low-income housing tends to be older, poorly insulated and energy draining buildings. Our clients are trapped in a cycle of being unable to heat their homes properly and in a manner that fits their budgets.

It is fortunate and timely that the Town of Bridgewater has taken on this challenge. Community charitable organizations face a decrease in volunteers and are constantly fundraising to meet the needs of their clients. We are competing for every dollar with sports organizations, churches, schools and other organizations. Listening to, and hearing the voices of struggling families, seniors and singles brings these concerns to the forefront. The partnerships formed by their proposed program will allow organizations to work together to meet the community needs while ensuring that dollars raised for these projects will be used efficiently and effectively. The increased understanding of the problem can only move us forward to develop solutions. We believe that the framework developed through this process is easily transferable and necessary as we are aware that our sister clubs across Canada are all struggling to meet the energy needs of community members.

The Bridgewater and Area Lions Club is committed to meeting the needs of the community that we serve. The needs are increasing. We will continue to focus on meeting the immediate heating needs of our clients while working with the Project to examine how we can assist with energy affordability and improved housing conditions in Bridgewater. This will take many hands and we are willing to assist.

Bill Bruhm

Bill Bruhm, President

Bridgewater and Area Lions Club

February 22, 2019

Privy Council Office
Attn: Impact and Innovation Unit
Room 1000
85 Sparks Street
Ottawa, Ontario K1A 0A3

Re: Support for Town of Bridgewater's Smart Cities Challenge Finalist Application

To the Smart Cities Challenge jury,

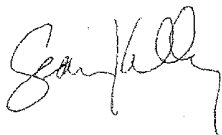
This letter is to confirm the full support and confidence of the Clean Foundation (Clean) in the Town of Bridgewater (Bridgewater) to implement its Energy Poverty Reduction Program as a Smart Cities Challenge finalist. Clean is a non-profit, non-governmental environmental organization with a mission to provide individuals and communities with the means, knowledge, and opportunity to make responsible environmental choices. Our energy efficiency department provides program management, training and technical services to help reduce energy poverty.

Clean is developing a Clean Climate Action project in partnership with rural municipalities and the Nova Scotia Department of Energy and Mining, funded by the Federation of Canadian Municipalities. The outcome of this project is to increase the capacity, knowledge and skills necessary to address greenhouse gas (GHG) emissions reductions in those communities. Bridgewater has been a leading innovator in developing local energy solutions and their continued work with Smart Cities provides an excellent model that can be transferred not only to these municipalities in Nova Scotia, but across Canada as well.

Clean has partnered with Bridgewater on Property Assessed Clean Energy (PACE) financing programs, including Clean Energy Financing and Clean Net Zero (two turnkey residential retrofit programs). Clean also administers the HomeWarming program, a low income residential retrofit program in partnership with Efficiency Nova Scotia. Through Bridgewater's effective consultation efforts Clean has been able to provide input for the design of their Energy Poverty Reduction Program. The continued focus on collaboration in Bridgewater's application through coordinated access and connected technologies will strengthen community relationships and empower those that are most at-risk of experiencing energy poverty.

Given Clean's past and present partnerships with Bridgewater, our expertise in residential energy efficiency retrofit programs, as well as the learnings from our Clean Net Zero pilot program, we would be happy to provide support on Bridgewater's Program. Specifically, we would be happy to provide support on outcomes relating to their Housing Energy Management System involving service delivery and design of the retrofit program. Clean is assured in Bridgewater's vision to reduce energy poverty and we are excited to partner with them on implementing their Energy Poverty Reduction Program.

Sincerely,



Sean Kelly
Director of Energy Programs, Clean Foundation



**DALHOUSIE
UNIVERSITY**

Faculty of Computer Science
6050 University Avenue
Halifax, NS, Canada, B3H 1W5
Tel: +1 902 494 1986, Fax: +1 902 492 1517
email: paulovich@dal.ca

February 25, 2019

Privy Council Office
Attn: Impact and Innovation Unit
Room 1000
85 Sparks Street
Ottawa, Ontario K1A 0A3

Re: Support for Town of Bridgewater Smart Cities Challenge Finalist Application

To the Smart Cities Challenge jury,

This is a letter confirming the full support and confidence of Dalhousie University Smart City Research Group in the Town of Bridgewater to implement its Energy Poverty Reduction Program as a Smart Cities Challenge finalist.

Founded in 1818 in Halifax, Dalhousie is a member of the U15 group of leading research-intensive universities in Canada and is the largest research university in the Maritimes. The Smart City Research Group is a recent initiative of the Dalhousie's Faculty of Computer Science and is a focal point for research involving technologies to improve the way data is used to improve population wellbeing. The initiative mandate is to promote collaborative and interdisciplinary research in all aspects of smart cities. We understand that data and connected technologies can tremendously benefit cities or small communities enabling the discovery and more in-depth understanding of the needs of the local population, very aligned with the Towns Energy Poverty Reduction Plan primary objective.

It is the understanding of our research initiative that the critical element for putting the smart city concept in practice is data integration, which is in the core of the Bridgewater's plan. Through properly integration, different community stakeholders can share information, substantially improving how decisions are made and the transparency of the process. The result is to give voice to sectors of a city/town that could be otherwise marginalized, empowering people that are typically out of the decision-making process, who are, in the case of Bridgewater, those that are most at-risk of energy poverty. An idea that could be potentially extended to other communities at Nova Scotia, or even across Canada, to address different local problems beyond the energy-poverty issue.

We firmly believe that in this data-driven world, initiatives such as the Towns Energy Poverty Reduction Plan of Bridgewater have the potential to have a significant impact on the population

wellbeing, allowing different stakeholders to work together and to make more informed decisions. The Smart City Research Group of Dalhousie University is excited to be part of this initiative, and we are committed to partnering with Bridgewater to implement the Energy Poverty Reduction Program.

Sincerely,

A handwritten signature in dark ink, appearing to read 'FV Paulovich', with a stylized flourish at the end.

Fernando V. Paulovich, Ph.D.
Associate Professor & Canada Research Chair in Data Visualization
Head of the Visual Analytics & Visualizaton Lab
Faculty of Computer Science
Dalhousie University

February 28, 2019

Privy Council Office
Attn: Impact and Innovation Unit
Room 1000
85 Sparks Street
Ottawa, Ontario K1A 0A3

Re: Support for Town of Bridgewater's Smart Cities Challenge Finalist Application

To the Smart Cities Challenge jury,

This is a letter confirming the full support and confidence of Ecology Action Centre in the Town of Bridgewater to implement its Energy Poverty Reduction Program as a Smart Cities Challenge finalist.

The Ecology Action Centre (EAC) is a member-based environmental charity in Nova Scotia. We take leadership on critical environmental issues from biodiversity protection to climate change to environmental justice.

Energy poverty is a serious issue in Nova Scotia, especially in smaller towns like Bridgewater. All climate solutions need to address the day-to-day concerns of your average citizen, and that includes the affordability of energy bills. Unless we use alleviating energy poverty as an opportunity to tackle climate change, it remains a barrier to climate action. We trust and support Bridgewater's efforts to reduce energy poverty in their community.

The EAC delivers energy efficiency workshops for landlords and property managers that could be helpful for Bridgewater's Energy Poverty Reduction Program. We would be more than happy to support Bridgewater by delivering workshops tailored to their community and various stakeholders within their community. The Town of Bridgewater has done excellent work consulting with inside and outside the community stakeholders. Not only did Bridgewater staff call us for conversations about energy efficiency and environmental policy advice, but they shared their research with us so that our programs could benefit and grow from their learnings as well. This demonstrates the immense impact that Bridgewater's Energy Poverty Reduction Program will have on other communities in Nova Scotia and beyond. There are very few other small communities who are so innovative and successful in their endeavours to construct clean energy solutions for their community. Bridgewater has not only lead the way but creates tools and resources for other communities to follow their lead. We have even promoted Bridgewater's efforts to European communities looking to improve their energy plans, through an international knowledge exchange project called SECURE (Smart Energy Communities in the Northern Periphery of Europe).

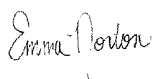
The Town of Bridgewater understands that energy poverty requires turnkey solutions that are easy to use and cut through the silos slowing down effective community solutions. Bridgewater has spent years supporting various community stakeholders and building relationships. This means that their

community has faith in the town and their solutions, and the Town is clear about what different stakeholders in the community have to offer, and also what they need.

Our work strives to find the intersection between environmental and social. It is those who live under the poverty line and those that struggle with energy poverty that will suffer the first and worst due to climate change. As such, we are especially interested in Bridgewater's outcomes that relate to improved energy affordability, improved housing conditions, inclusion and empowerment of marginalized and vulnerable families, and increased energy efficiency. The EAC is most able to contribute to the environmental aspects of Bridgewater's project.

We have the utmost confidence in the Town of Bridgewater. They have demonstrated some of the most tangible visionary leadership in all of Nova Scotia, across Canada, and even throughout the world. We are proud of the work they have done and look forward to seeing what they accomplish in the next decade. We are excited to support the Energy Poverty Reduction Program through workshops and partnership when it is helpful to their program.

Sincerely,
Emma Norton



Energy Conservation Coordinator, Ecology Action Centre



EfficiencyOne

230 Brownlow Avenue, Suite 300 Dartmouth,
Nova Scotia, Canada B3B 0G5
efficiencyone.com
Tel: 902 470 3500
Fax: 902 470 3599
smacdonald@efficiencyone.com

February 22, 2019

Privy Council Office
Attn: Impact and Innovation Unit
Room 1000 - 85 Sparks Street
Ottawa, Ontario K1A 0A3

To the Smart Cities Challenge jury panel,

Re: Support for Town of Bridgewater Smart Cities Challenge Finalist Application

This letter confirms the full support and confidence of EfficiencyOne to partner in the delivery of the Town of Bridgewater's Energy Poverty Reduction Program as a Smart Cities Challenge finalist. EfficiencyOne is a leader in the design and delivery of energy efficiency programs and services and the current holder of the Efficiency Nova Scotia franchise, making it Canada's first energy efficiency utility. Efficiency Nova Scotia offers services to help Nova Scotian households, businesses, non-profits and institutions achieve lower energy costs. To date, over 278,000 Nova Scotians have participated in efficiency programming, saving \$165M annually and reducing the province's electrical load by 10%.

The Town of Bridgewater is the leader among Nova Scotian municipalities in developing and implementing local energy solutions. Through Efficiency Nova Scotia services, nearly 5,000 projects have taken place in homes and businesses in Bridgewater, saving more than \$1 million annually on energy bills. Despite the great work that has already been accomplished, two in five Bridgewater residents experience energy poverty.

Through the Energy Poverty Reduction Program and the community-wide Energize Bridgewater initiative, the Town of Bridgewater is at the outset of one of the most ambitious energy projects ever undertaken in Nova Scotia. This project will significantly improve the circumstances of those who are at risk for energy poverty. EfficiencyOne will provide advice, information and financial assistance to support the following outcomes of the Smart City Challenge application:

- reduce and stabilize energy expenses for residents;
- improve residential energy management practices; and
- increase energy security for residents.

Furthermore, EfficiencyOne is committed to partnering with the Town of Bridgewater on program design and delivery to ensure the program is effective and the residents receive the best energy outcomes.

EfficiencyOne is proud to support the Town of Bridgewater's Smart Cities Challenge application and is confident in the Town's vision to reduce energy poverty for residents. The outcomes of Bridgewater's Energy Poverty Reduction Program will also assist EfficiencyOne to help other Nova Scotian municipalities in reducing energy poverty and help EfficiencyOne undertake deep energy retrofits at homes across the province.

Please do not hesitate to contact me if you have any questions about our support for the Town of Bridgewater's Smart Cities Challenge Energy Poverty Reduction Program.

With kind regards,

Stephen MacDonald
Chief Executive Officer

efficiency
NOVA SCOTIA

21st February, 2019

Privy Council Office
Attn: Impact and Innovation Unit
Room 1000
85 Sparks Street
Ottawa, Ontario K1A 0A3

Re: Support for Town of Bridgewater's Smart Cities Challenge Finalist Application

To the Smart Cities Challenge jury,

This is a letter confirming the full support and confidence of Energy Services Association of Canada (ESAC) in the Town of Bridgewater to implement its Energy Poverty Reduction Program as a Smart Cities Challenge finalist.

ESAC's purpose is to develop and advocate adoption of government policy, regulations and programs that enhance the role of performance-based solutions in achieving government's climate change, conservation and economic development objectives. Our aim is to increase the profile of performance based solutions as well as members of ESAC in achieving climate change and conservation objectives, particularly by politicians and senior levels of government.

Partnering with the private sector, specifically under the form of an Energy Services Contractor (ESCO) provides the financial resources, expertise, risk transfer and project implementation expertise for deep retrofits in exchange for a portion of the financial savings that result over the term of the contract. ESCO's typically offer comprehensive contracts that include energy reporting/ information and control systems, energy audits, installation, operation and maintenance of equipment and can competitive finance if required.

An essential element of the Energy Performance Contract (EPC) is to provide the assurance of a performance guarantee, placing the risk of under performance (management and technical) with the ESCO rather than the property owner. Partnering with an ESCO provides a valuable conduit for capitalizing neighborhood retrofits, aligning ESAC initiatives align with the Town's energy poverty reduction program.

ESAC works with all levels of Government across Canada to promote much required initiatives such as the Town of Bridgewater is going to achieve. Not only is it imperative that we reduce our excessive consumption of energy and introduce cleaner ways to lessen our impact on the environment, but there are numerous reports that show the benefit such projects have on social enterprise projects and local resiliency programs, reduction of; addiction issues, suicides, self-medicating and local crime.

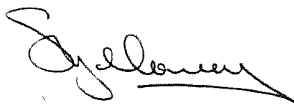
22 Adelaide Street West, Suite 3400, Toronto, Ontario M5H 4E9Tel: 416.357.1198
stuartgalloway@energyservicesassociation.ca
<https://twitter.com/EnergyESACstu>

energyservicesassociation.ca
www.linkedin.com/in/stuartgalloway01

ESAC members see such a project as the Town of Bridgewater has developed as inspiring and I can confirm that the members are committed to engaging in a competitive tendering process, relishing the opportunity to demonstrate innovative ways to work with and be an integral part of Bridgewater's SMART City vision. The project closely aligns with what ESAC and its members have been working with Government to achieve across all levels of public sector socially inclusive projects.

We are assured of the Town of Bridgewater's vision to reduce energy poverty and ESAC is extremely hopeful that the Town is successful in its Smart Cities Challenge application as we wish them every success. Indeed, we are excited to commit to partnering with the Town to implement the Energy Poverty Reduction Program.

Sincerely



Stuart Galloway

*Chief Executive Officer
Energy Services Association of Canada*

22 Adelaide Street West, Suite 3400, Toronto, Ontario M5H 4E9 Tel: 416.357.1198
stuartgalloway@energyservicesassociation.ca
<https://twitter.com/EnergyESACstu>

energyservicesassociation.ca
www.linkedin.com/in/stuartgalloway01

FREEMAN HOUSE
www.fswns.org
Child, Youth & Family Hub Coordination of Services
Youth Outreach 16+
Family Support
Men's Intervention & Health Promotion
Supervised Access & Exchange
Primary Health Care Access
Housing Support/Housing First

FSWNS
48 Empire Street
P.O. Box 131, Bridgewater
Nova Scotia
Canada
B4V 2N1
Phone 902 543-7444
Toll-free 1 877 882-7722
Fax 902 543-0932



March 1, 2019
Privy Council Office
Attn: Impact and Innovation Unit
Room 1000
85 Sparks Street
Ottawa, Ontario K1A 0A3

Re: Support for Town of Bridgewater Smart Cities Challenge Energy Poverty Reduction Program

To the Smart Cities Challenge jury panel,

This is a letter confirming the full support and confidence of Family Service Association of Western Nova Scotia (FSAWNS) – and our local sites Freeman House and 629 King Street - in the Town of Bridgewater's collective capacity to achieve the outcomes of its proposed Energy Poverty Reduction Program. At Family Service Association of Western Nova Scotia, we have the capacity to play a critically important role in the Town's achievement of the Program's goals, particularly through supporting the co-development together with the Town and our Community Partners, of an effective Coordinated Access System.

FSAWNS has its own experience of applying for and delivering, successfully and on time, on projects funded through Federal and Provincial funding sources. Federal funding has included PHAC support for our Nova Scotia Trauma Informed Network, and ESDC Homelessness Partnering Strategy support for our Lunenburg/Queens Housing Support Program. Provincial support has included funding from the Nova Scotia Department of Community Services, Prevention and Early Intervention Sector, for Programs including Men's Intervention, Youth Outreach, Family Support, and, Community Hub Coordination of support and services.

In addition, since August 2018, we have been successfully on-track with completion of an affordable housing and Coordinated Access site at the former Rofihe Store site in the Town of Bridgewater. The site development will include supported affordable housing units and storefront access to community-based support and services. It is an ideal site for partnering with the Town and our community partners to create a people-centered Coordinated Access support and services delivery system spanning needs across the Social Determinants of Health.

The following are indicators our funders have identified as key to the site's success.

- FSWNS has the human resource's capacity to see this project to a successful conclusion. Its history of successful operation over the past 25 years is a demonstration of this.

- FSWNS is not without some financial resources with over \$50,000 typically in cash assets. This is significant from an operational perspective as 'liquidity' is one of the key measures in determining the sustainability of a non-profit.
- FSWNS has already requested quotes for ground floor renovations related to structural and services. Further, conversations with this same contractor for the all of the interior renovations have begun. The contractor is known to Housing Nova Scotia regional staff as both reputable and competent.
- The Town of Bridgewater is 100% supportive of the project which is an asset to facilitating the administrative components of the construction project.
- It is an opportunity for partnerships that will create more than one programs could do alone.
- The building is ideally located, close to all of the amenities people access.
- Census data shows that Bridgewater is the only town in Nova Scotia experiencing growth and one of the resulting pressures is the lack of affordable housing. Although small in number the affordable housing created is much-needed.
- Preliminary cash flow estimates are favourable.
- The project further supports a coordinated model in Bridgewater. Guiding principles, such as: sustaining a collective focus on how programs and services should intersect in order to achieve better outcomes for the people we serve and increasing our collective capacity to support the people we serve at individual, social and systems levels, are foundational supports the community can build upon to achieve coordinated access to service provision in a rural community.

We are a passionate community-based champion of Coordinated Access as defined within Canada's National Housing Strategy, for 2019 onward, called: Reaching Home. Furthermore, as a member of a non-designated rural community, we are passionate about developing Coordinated Access systems in rural areas like the South Shore of Nova Scotia. The Town's Energy Poverty Reduction Program is a perfect fit with our work in this regard. Coordinated Access is a collective means for coordinating support and services based on triaging need together, using real-time data collection, and nationally familiar assessment tools, in order to ensure that our most excluded and vulnerable populations are included and linked with the support and services they self-identify are needed spanning the Social Determinants of Health (SDoH). Coordinated Access invites all of us to work from unfamiliar, collective, people-centered perspectives, and outside of our traditional, familiar territories of service delivery. It requires all of us to change how we work to better meet the needs of our local and national communities in 21st century Canada.

I am so proud of the Town of Bridgewater for proposing an Energy Poverty Reduction Program that embeds smart Coordinated Access collaboration, using shared and transferable nationally available tools, to impact our lives in this Town, and, this Nation. I am so proud of Canada for funding the opportunity.

Yours truly,



Art Fisher
Executive Director,
Family Service Association of Western Nova Scotia



February 23, 2019

Privy Council Office
Attn: Impact and Innovation Unit
Room 1000
85 Sparks Street
Ottawa, Ontario K1A 0A3

Re: Support for Town of Bridgewater's Smart Cities Challenge Finalist Application

To the Smart Cities Challenge jury,

This is to confirm the full support and confidence of Green Power Labs in the Town of Bridgewater to implement its Energy Poverty Reduction Program as a Smart Cities Challenge finalist.

Green Power Labs' mission is to bridge the gap between energy resources and their users and to enhance energy management in Atlantic Canada, nationally and internationally. We realize this mission by providing comprehensive decision support and predictive energy management products and services.

Predictive energy analytics encompasses a variety of advanced techniques that analyze current and historical data to predict future events and effectively prepare for their impact. With the rising cost of energy, and the rapid changes in how we generate electricity, the business case for the use of predictive analytics in our communities is compelling. We provide value by helping our clients use connected technology to reduce energy consumption, energy expenses, and environmental impact.

Green Power Labs has been a strategic advisor for the Town of Bridgewater's Smart Cities Challenge Finalist application in 2018-2019. We are very supportive of the connected technology work the Town of Bridgewater has been advancing to reduce energy use budgets of the households in the community and their risks of energy poverty. The proposed Energy Poverty Reduction (EPR) project proposed by the Town in the Smart Cities Challenge sees, presents and leverages the use of connected technology as a core element of a smart cities approach for communities in Canada.

The EPR Connected Technology Engine proposed by the Town coordinates the proposed energy asset applications and solutions as a part of the project activities. This includes Connected Energy Efficiency solutions such as smart thermostats for residential houses and smart thermal optimization for multi-unit residential buildings and municipal buildings, and connected clean technology solutions such as residential microgrids, virtual community loads and power plants, and electricity micro market management. The digital technology supports a democratization of clean energy distribution and consumption with innovative and significantly beneficial social outcomes.

Green Power Labs will be pleased to help develop and deploy the advanced Town's Energy Management Information System (EMIS) that would measure the efficiency of foundational and advanced energy services and support related to energy productivity for the households-at-risk, and broader municipal energy efficiency programs. The EMIS will operationalize municipal energy management objectives and provide an efficient means

1 Research Drive, Dartmouth Nova Scotia, Canada B2Y 4M9
ph: 902 466 6475 | fax: 902 466 6889 | greenpowerlabs.com



to audit and account for prescribed EPR outcomes. It will enable the Town to improve energy performance, related energy use, cost and carbon footprint in a low-carbon economy.

Green Power Labs is confident of the assurance the Town of Bridgewater has required in the development and deployment of the EMIS in the municipality. This is based on the highest data analytics level of the EMIS including advanced predictive analytics applications developed by the company. Also, the cutting edge EMIS components demonstrated, tested and used in the industry in Canada over the last 10 years will bring municipal EMIS solutions to the Town at reduced costs while ensuring its highest quality.

We fully support the Town of Bridgewater's proposal to reduce energy poverty in the community. Green Power Labs is committed to partnering with the Town to implement the Energy Poverty Reduction Program with all key connected technology components.

Sincerely,

A handwritten signature in black ink, appearing to read "A. Pavlovski", with a long horizontal line extending to the right from the end of the signature.

Alexandre Pavlovski, PhD, P.Eng.
President & CEO



Office of the President
and Chief Executive Officer
P. O. Box 702 Stn Central
Halifax, NS B3J 2T3
www.housingns.ca

FEB 28 2019

Privy Council Office
Attn: Impact and Innovation Unit
Room 1000, 85 Sparks Street
Ottawa, Ontario K1A 0A3

Re: Support for Town of Bridgewater's Smart Cities Challenge Finalist Application

To the Smart Cities Challenge Jury:

Please accept this letter to confirm Housing Nova Scotia's support for the Town of Bridgewater in their attempt to implement the Energy Poverty Reduction Program as a Smart Cities Challenge finalist.

As the provincial government agency responsible for the administration and delivery of affordable housing programs for low-to-modest income Nova Scotians, Housing Nova Scotia is aware of the many difficulties related to an old and inefficient housing stock, high energy prices, and low incomes. Many individuals who find themselves living in energy poverty are seeking solutions for either repairing their housing or looking for alternative affordable housing.

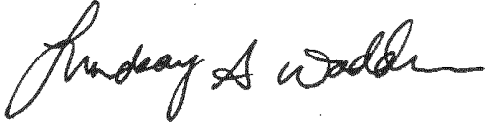
Housing Nova Scotia has provided information on its existing programs to the Town of Bridgewater, including the number of public housing units, locations, and general condition of the housing stock. We have expressed our interest in helping to monitor and reduce the energy consumption of these public buildings. Furthermore, Housing Nova Scotia offers programs for homeowners and landlords to carry out health and safety repairs to their properties, so they can remain affordable. In some cases, clients are referred to Efficiency Nova Scotia, a provincial energy efficiency utility, for energy savings upgrades. A similar partnership may be possible with the Town of Bridgewater, whereby clients that qualify to Housing Nova Scotia or Efficiency Nova Scotia programs could also benefit from the Energy Poverty Reduction Program.

The Town's proposal to increase collaboration between organizations using data and connected technology platforms is a strong and preventative model for reducing energy poverty. A coordinated access system for interrelated services would ensure those who need resources are prioritized. The Town has a track record for creating solutions under the Energize Bridgewater program which can be emulated by other communities. Housing Nova Scotia is supportive of Bridgewater's ability to have a regional and national impact through this proposal.

... p. 2

Housing Nova Scotia is pleased to continue its close working relationship with the Town of Bridgewater to implement the Energy Poverty Reduction Program.

Sincerely,



for Nancy MacLellan
President and Chief Executive Officer

cc: Mr. Earl Mielke, Program Manager, Western Regional Housing Services, HNS

February 27th, 2019

Privy Council Office
Attn: Impact and Innovation Unit
Room 1000
85 Sparks Street
Ottawa, Ontario K1A 0A3

Re: Support for Town of Bridgewater's Smart Cities Challenge Finalist Application

To the Smart Cities Challenge jury,

This is a letter confirming the full support and confidence of *Lunenburg County Seniors' Safety Program*, a project of *Safe Communities Lunenburg County*, in the Town of Bridgewater to implement its Energy Poverty Reduction Program as a Smart Cities Challenge finalist.

Safe Communities Lunenburg County (SCLC) is a registered non-profit organization that oversees several projects and programs that enhance the wellbeing of the community. The mission of the SCLC is to continually improve the safety of individuals and communities in Lunenburg County by enhancing a culture of safety and wellness. The *Lunenburg County Seniors' Safety Program* serves the safety needs of seniors in our community through education, presentations, advocating on behalf of seniors and one to one support. We work closely with seniors, their support systems, community and collaborating partners. We provide support with safety issues such as; financial hardship, elder abuse, transportation, food security, housing, wellbeing issues etc. We help people connect to the services they need.

Many of our clients feel the effects of energy poverty on a daily basis. We serve seniors in the community who must make difficult choices about which bill to pay or how high they can afford to turn their heat up. We have visited seniors who are living by the light of an old cell phone, without power or heat. At times, medication is not purchased so that the light bill is paid. We try to help senior's access financial aid to ease their hardship but the supply is limited and the need is great.

The Bridgewater Energy Poverty Reduction Program will improve the quality of life for seniors living in Lunenburg County. This program will offer options to reduce energy costs, find housing that is more economical and retain more of what limited income they receive. It will foster an opportunity for improved health and wellness. As a program, we will be able to focus more on safety needs beyond the basic fundamental physical needs of an individual.

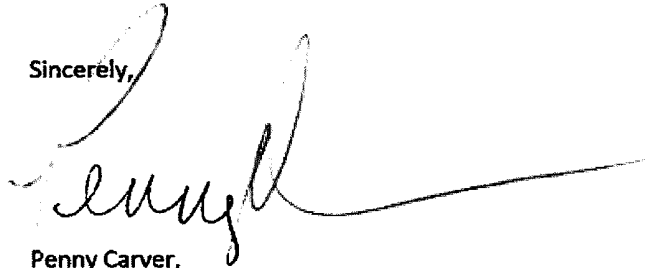
We were very impressed with how the Town of Bridgewater has worked with such great focus and determination to try to bring this program to fruition. What is most striking is their commitment to inclusion and finding out how all community members feel. The Lunenburg County Seniors' Safety Program assisted with gathering information from seniors through surveys, attending workshops and participating in interviews. Our clientele is very pleased that their voices are heard.

The Town has demonstrated their committed to coordinated access with an "all hands on deck" approach, which will make this program a success. A program of this design will remove walls and build bridges between individuals, the community and all invested partners. It is very exciting to think of this project's promising potential can be applied in different communities across Canada!

The Town of Bridgewater has demonstrated their commitment to coordinated access with an "all hands on deck" approach, which will make this program a success. A program of this design will remove walls and build bridges between individuals, the community and all invested partners. It is very exciting to think that this project's promising potential can be applied in different communities across Canada!

We are excited to continue to be part of this project; we share the vision of the Town of Bridgewater. Improved energy affordability, service accessibility, improved housing, new economic opportunities and increased environmental quality are very important and will make a difference for everyone. We know that the Town of Bridgewater has a strong spirit of getting things done – getting things done that serve community well-being. We firmly believe the Town of Bridgewater can deliver on the program goals.

Sincerely,

A handwritten signature in black ink, appearing to read 'Penny Carver', with a long horizontal flourish extending to the right.

Penny Carver,
Chair, Lunenburg County Seniors' Safety Advisory Partnership
Councillor, Town of Mahone Bay



YMCA of Southwest Nova Scotia

75 High Street
Bridgewater, NS B4V 1V8
T: 902-543-9622
ymcalunenburgcounty.org

February 21, 2019

Privy Council Office
Attn: Impact and Innovation Unit
Room 1000
85 Sparks Street
Ottawa, Ontario K1A 0A3

Re: Support for Town of Bridgewater's Smart Cities Challenge Finalist Application

To the Smart Cities Challenge jury,

This is a letter confirming the full support and confidence of Lunenburg County YMCA in the Town of Bridgewater to implement its Energy Poverty Reduction Program as a Smart Cities Challenge finalist.

Lunenburg County YMCA sees people of all walks of life come through our doors. The Energy Poverty Reduction Program would greatly benefit some of those people by lowering the level of stress they endure due to financial hardship. The Town of Bridgewater sees the highest core housing need as well as the lowest average household income in Lunenburg County.

The Town of Bridgewater has created many partnerships on this initiative to best help those in need. They have a strong team for the Energy Poverty Reduction and full support of their Municipal Council.

Lunenburg County YMCA is willing to provide its members with any information regarding the Energy Poverty Reduction Program in hopes that they can benefit from this program and lower their financial stress levels as well as better themselves physically at the Y.

If you have any questions or require additional information, please reach out.

Thanks,

Kim Roy

Centre Manager

YMCA of Southwest Nova Scotia
Lunenburg County YMCA
75 High Street Bridgewater, Nova Scotia B4V 1V8
T: 902-543-9622 M: 902 521 5980 E: kim_roy@ymca.ca

*Building healthy
communities*



ymcalunenburgcounty.org

HALIFAX



MIKE SAVAGE

MAYOR
LE MAIRE
ME'R

1841 Argyle Street
PO Box 1749
Halifax, Nova Scotia
Canada B3J 3A5

902.490.4010
1.800.835.6428

mayor@halifax.ca
halifax.ca
@mikesavagehrm

March 4, 2019

Privy Council Office, Officer of the Prime Minister of Canada
Attn: Impact and Innovation Unit
Room 1000
85 Sparks Street
Ottawa, Ontario K1A 0A3

Re: Support for Town of Bridgewater's Smart Cities Challenge Finalist Application

To the Smart Cities Challenge Jury,

I am very pleased to offer my full support and confidence in the Town of Bridgewater to implement its innovative Energy Poverty Reduction Program as a Smart Cities Challenge finalist.

Halifax Regional Municipality is highly aware of the social and environmental impacts that climate change is having on Nova Scotia. Our municipality is only the second in Canada to declare a climate emergency and is currently working on a climate action plan for a sustainable future. Further to the environmental impacts of a reliance on fossil fuels, are the economic impacts on vulnerable individuals. Nova Scotians endure some of the highest energy prices in Canada, paying 15.3 cents per kilowatt hour before taxes, well above the Canadian average of 12.9 cents. Energy poverty is a structural societal issue that is faced not only by Bridgewater, but by towns and municipalities across Nova Scotia.

Bridgewater has emerged as a leader in addressing this issue and the community's actions are an important step in enabling other municipalities to act on energy poverty. The Town's municipal Council, led by Mayor David Mitchell, has shown urgency and ambition on climate change, setting an 80% emissions reduction target by 2050 in their Community Energy Investment Plan. Parallel to Halifax Regional Municipality's Solar City program, Bridgewater has implemented a PACE financing program for energy upgrades and is collaborating with the Clean Foundation on an innovative Net Zero housing program.

Bridgewater's proposed Energy Poverty Reduction Program model would be demonstrably effective elsewhere in Nova Scotia at empowering those who experience energy poverty and should be emulated by municipalities across Canada. Many of the issues our communities face require increased collaboration between local service providers that help those across the spectrum of need. Utilizing data and connected technology to improve the energy security of households is key to ensuring that households can achieve their basic needs.

Halifax Regional Municipality is proud to share a vision for a clean and affordable energy future with our friends at the Town of Bridgewater and is ready to exchange knowledge on addressing climate change. Our municipality wishes the Town of Bridgewater the best of luck on its Smart Cities Challenge bid to put Nova Scotia on the map as Canada's leader on climate change.

Mike Savage
Mayor



New Dawn Enterprises Ltd

P.O. Box 1055, 106 Townsend St, Sydney, Nova Scotia B1P 5E1

Phone: 539-9560 Fax: 539-7210

Website: www.newdawn.ca

February 22, 2019

Privy Council Office
Attn: Impact and Innovation Unit
Room 1000
85 Sparks Street
Ottawa, Ontario K1A 0A3

Re: Support for Town of Bridgewater's Smart Cities Challenge Finalist Application

To the Smart Cities Challenge Jury,

This is a letter confirming the full support and confidence of New Dawn Enterprises in the Town of Bridgewater to implement its Energy Poverty Reduction Program as a Smart Cities Challenge finalist.

New Dawn Enterprises Limited is the oldest Community Development Corporation in Canada.

New Dawn is a private, volunteer-directed social enterprise dedicated to community building. It seeks to identify community needs and to establish and operate ventures that speak to those needs. Its mission is to engage the community to create and support a culture of self-reliance. Its vision is a self-reliant people living in a vibrant community. New Dawn articulates this mission through a number of businesses, organizations, and partnerships.

Among its businesses and activities are New Dawn Health Care, New Dawn Real Estate, New Dawn Community Engagement and Education, New Dawn Meals on Wheels, the Cape Breton Island Centre for Immigration, and the New Dawn Centre for Social Innovation.

For more than a decade, New Dawn administered Community Economic Development Investment Funds (CEDIFs) to raise local capital for the start-up and expansion of local businesses. In Nova Scotia, CEDIFs have long been a key tool in community economic development providing a provincially-supported mechanism for the raising of community capital. Given the CEDIF oversight by the Nova Scotia Securities Commission, CEDIF investors today benefit from strong legal and regulatory frameworks.

Since their inception more than twenty years ago, CEDIFs have been used by community economic development organizations, by for profit and not-for-profit cooperatives, and by private sector groups and companies. While CEDIFs can serve a variety of business needs, they are highly compatible with ownership structures that have social and community focused missions.

CEDIFs can be used on an annual basis to advance a particular project or group of projects or on an ad hoc basis to raise all of the capital needed to see a particular effort through to completion.

CEDIFs bring the added advantage of genuinely engaging investors – through education and participation – in the work being advanced by the CEDIF – i.e. supporting the growth of local businesses, creating or expanding wind farm installations, creating new community housing.

Through a considerable amount of collaboration, the Town of Bridgewater's proposed program and potential use of a centralized CEDIF platform, using data and connected technology, will strengthen the impact investing sector and offer all Nova Scotians a powerful example of how this community-investment tool can be used to advance community sustainability.

Bridgewater's innovative use of a CEDIF program to support its sustainability initiatives are well within the scope and outcomes of the typical use of CEDIFs – i.e. the tendency for CEDIF capital to be used to advance community objectives and social causes such as GHG emission reductions and/or improved community health.

New Dawn has long supported the efforts underway in the Town of Bridgewater to demonstrate the impacts that are possible when a community puts sustainability at the forefront of its planning. We are confident that in the coming years, communities all across the country will be turning to Bridgewater as they endeavour to follow suit. We are invigorated by the Town's current emphasis on the reduction of energy poverty – a concept we are all becoming increasingly familiar with – and are excited to commit to partnering with the Town as they implement their Energy Poverty Reduction Program.

Sincerely,



Erika Shea
VP Development
New Dawn Enterprises



Reg Johnston
Chair of Nova Scotia Community Transportation Network
rjohnsxy@hotmail.com

February 19, 2019

Privy Council Office
Attn: Impact and Innovation Unit
Room 1000
85 Sparks Street
Ottawa, Ontario K1A 0A3

Re: Support for Town of Bridgewater's Smart Cities Challenge Finalist Application

To the Smart Cities Challenge jury,

This is a letter confirming the full support and confidence of the Nova Scotia Community Transportation Network (NSCTN) in the Town of Bridgewater to implement its Energy Poverty Reduction Program as a Smart Cities Challenge finalist.

NSCTN is a provincial organization that tackles the barriers to affordable and accessible community transportation options in rural Nova Scotia. We at NSCTN find the Bridgewater Energy Poverty Reduction Program works well with our mandate - to facilitate transportation options that lead to healthier and more connected communities throughout Nova Scotia by partnering with community organizations, governments and business.

NSCTN commends the town in naming this issue – Energy Poverty. This is a thought-provoking juxtaposition that tackles the conundrum of poverty as a lack of energy. This fits hand in glove with seeing poverty as a lack of access to affordable and accessible transportation options. With the town's high poverty rate, access to transportation is a barrier to many residents, especially seniors. Transportation options lead to improved housing conditions, service accessibility, inclusion and empowerment of marginalized and vulnerable families, new economic opportunities, and increased environmental quality of life.


We have worked with and supported Bridgewater Transit's launch of their pilot project. We see Bridgewater Transit as a major player in the South Shore Transit Project. This project connects the South Shore communities resulting in healthier, more vibrant independent rural communities.

We see that the Bridgewater Energy Poverty Reduction Program further facilitates our organization's work in capacity building in Lunenburg County. NSCTN is always interested in promoting proven models that can be transferred to other rural communities in Nova Scotia. The new relationships are being forged here with non-traditional for-profit and non-profit community-based transportation providers is creating a vital network that will harnesses the talents of all providers. This will result in an affordable, efficient transportation network that benefits all communities in Nova Scotia.

Energy poverty identifies the barriers that prevent people from aging in place, escape social isolation, and have a sustainable quality of life. NSCTN pledges continued support, working with the Town of Bridgewater to build an affordable, accessible and sustainable transportation option for their residents and allow them to reach their goals of reducing energy poverty in their community.

NSCTN fully supports of the Town of Bridgewater's vision to reduce energy poverty and are excited to commit to partnering with the community to implement the Energy Poverty Reduction Program.

Kind regards,

A handwritten signature in dark ink, appearing to read 'Reg Johnston', written in a cursive style.

Reg Johnston

Chair, NSCTN

February 22, 2019

Privy Council Office
Attn: Impact and Innovation Unit
Room 1000
85 Sparks Street
Ottawa, Ontario K1A 0A3

Re: Support for Town of Bridgewater's Smart Cities Challenge Finalist Application

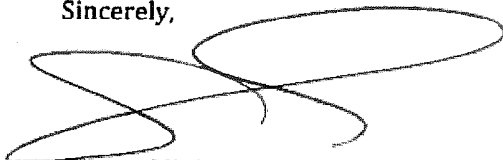
To the Smart Cities Challenge Jury,

This is a letter confirming the support and confidence of the Nova Scotia Department of Energy and Mines in the Town of Bridgewater to implement its Energy Poverty Reduction Program as a Smart Cities Challenge finalist. The Province is committed to improving affordability, and comfort through the reduction of energy poverty across Nova Scotia, and this Smart Cities Challenge program will help to meet these goals.

The Department of Energy and Mines has been a partner in the development of Bridgewater's Community Energy Investment Plan and are supportive of the implementation of the plan. The focus of the project on improved energy affordability for low-income community members is important as we transition towards low-carbon energy options. Also, under the federal Pan-Canadian Framework on Clean Growth and Climate Change and the Department of Energy and Mines' current mandate, both levels of government are working to reduce greenhouse gases through innovative projects. We recognize the necessity of addressing GHG emissions and are specifically looking for opportunities to do so with a focus on social equity, incorporating new technologies, and energy data. Implementing the Energy Poverty Reduction Program in the Town of Bridgewater will allow for successes to be shared with communities across Nova Scotia and nationally.

The Nova Scotia Department of Energy and Mines is confident that the Town of Bridgewater will create significant change in their community by implementing the Energy Poverty Reduction Program and we are excited to see the program move towards the next steps of implementation. The Department will continue to be a committed partner on this project and we hope to see this valuable project move forward.

Sincerely,



Deputy Minister Simon d'Entremont
Department of Energy and Mines



February 22, 2019

Privy Council Office
Attn: Impact and Innovation Unit
Room 1000
85 Sparks Street
Ottawa, Ontario K1A 0A3

Re: Support for Town of Bridgewater's Smart Cities Challenge Finalist Application

To the Smart Cities Challenge jury,

This is a letter confirming the full support and confidence of Public Health Services, Western Zone, Nova Scotia Health Authority in the Town of Bridgewater to implement its Energy Poverty Reduction Program as a Smart Cities Challenge finalist.

Public Health is a service of Nova Scotia Health Authority and is a key part of the health system. Public Health's work is focused on improving the health of the population by working with others to address the social determinants of health and health inequities which impact health.

Public Health Staff encounter energy poverty directly as they support families and individuals in the community, and as they work with community partners to improve access to healthy, safe and affordable housing options. More broadly, we work with a variety of community partners to understand and take action on barriers to the social determinants of health which are connect to poverty.

The most recent Census of Canada in 2016 helps paint a picture of the magnitude and experience of poverty in the Town of Bridgewater. Almost 1 in 3 of all households (27.9%) and nearly half (48.6%) of the tenant households in the town of Bridgewater were identified as living with core housing need. 26.1% of children in the town of reported to be living in poverty, and overall, 22.7% of the population of Bridgewater is living at or below the low income measure, after tax.

Furthermore, as housing and energy prices increase, low-and middle-income households are forced to make compromises in their efforts to feed themselves, stay warm, and pay for rent and heat. These factors combined – food insecurity, fuel poverty, poor housing conditions and housing unaffordability– have detrimental and long term effects on the health of individuals, and have an impact on the community. The costs of "doing nothing" to address poverty – as measured by increased health, justice, education and social services costs – far outweighs the cost of solutions.

The Town of Bridgewater's Energy Poverty Reduction Program, by alleviating the financial burden of energy costs on lower income households and improving housing conditions would support these households to devote more household resources to their other needs including other shelter costs, food, medication, transportation and social inclusion activities.

Throughout its fulsome community engagement process, the Town of Bridgewater has consulted with community partners and provided a variety of opportunities for community partners, stakeholders and the public to be part of this important work. Public Health staff have been involved in supporting the development of the process, promoting community engagement sessions, surveys and focus groups and

providing content support related to health outcomes for the project. We appreciate the efforts of the Town to engage and respond to the community during the past few months. We are very pleased to have been invited to the table as a partner!

Our community is fortunate to have in place a number of services and organizations seeking to improve the lives of our residents. Throughout this engagement process it has become evident that there are opportunities to improve collaboration and improve access to support for those who require it. Just by bringing together community stakeholders to discuss energy poverty in our community, the Town of Bridgewater has initiated improved relationships and understanding. As the program is further developed and implemented in the community, improved communication among providers will undoubtedly improve supports for individuals, here and in other communities; the challenges of coordinated services and rising energy costs are not unique to the Town of Bridgewater.

Public Health's work is focused on improving the health of the population and addressing the impact of the social determinants of health in our communities. Our work shows up in our communities in many ways as we work in collaboration to improve health. The proposed program's outcomes related to health and poverty are most closely associated with our work. As part of the broader health system in Nova Scotia, we have a role to play in supporting the success of this project through championing this work within our networks and among community members, supporting the collection of health outcome data, working with the Town of Bridgewater to develop an Energy Poverty Index, and by facilitating collaboration with other NSHA programs and services. We are pleased to have the opportunity to support this important work and will continue to seek opportunities to ensure its success.

The proposed project prioritizes access to improved energy savings for those who can benefit the most from them; those living with energy poverty. This is a bold and powerful statement about the commitment of the Town of Bridgewater to its' most vulnerable populations and demonstrates its commitment to the community's vision for the Town of Bridgewater as a diverse, thriving and healthy community. As other communities look to Bridgewater as an example of how to address the complex sustainability challenges, this project has potential to inspire others to also promote equity in their communities. Public Health looks forward to hearing that the Town of Bridgewater has been successful in their bid to receive the Smart Cities Challenge grant and working in partnership to take action!

Sincerely,



Nancy Green, BSc., BSCHP
Health Promoter
Public Health Services, Western Zone, South Shore

March 4, 2019

Privy Council Office
Attn: Impact and Innovation Unit
Room 1000
85 Sparks Street
Ottawa, Ontario K1A 0A3

Re: Support for Town of Bridgewater's Smart Cities Challenge Finalist Application

Dear Jury Panel:

As a company committed to helping build the Nova Scotia economy through clean energy progress and innovation, Nova Scotia Power is excited to support the Town of Bridgewater in its application for the Smart Cities Challenge. The Town of Bridgewater is taking bold action to help drive new solutions to decrease energy poverty, and Nova Scotia Power is committed to working with the Town to achieve their goals.

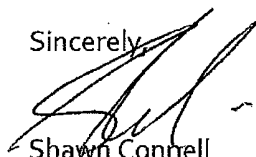
As new renewable energy technologies mature and become economic, Nova Scotia Power is committed to cost-effectively providing more green energy to Nova Scotians and reducing our carbon emissions. Today, Nova Scotia Power leads Canada in reducing carbon emissions, and we are on track to reach almost 40% renewable energy in 2020. NSP has done so with a laser focus on affordability – holding power rate increases, on average, to less than inflation since 2015.

Specific to the Town of Bridgewater's proposed project, Nova Scotia Power will:

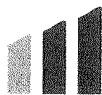
- support access to the smart metering and the Green Button initiative
- offer financing for heat pumps for home retrofits
- provide support and expertise for connected technology solutions and applications
- provide expertise on charging stations for electric public transport

The Town of Bridgewater has been a national leader in its energy programs, such as Energize Bridgewater and now their Energy Poverty initiative. Not only have they been innovative in their projects, they have openly shared their outcomes and best practices with other Nova Scotia municipalities. Nova Scotia Power applauds the work of the Town of Bridgewater in advancing the progress and awareness of energy innovation for economic solutions. We look forward to supporting this important work led by the Town in conjunction with Infrastructure Canada.

Sincerely,



Shawn Connell
Director, Customer Solutions
Nova Scotia Power Inc.



NOVA SCOTIA WORKS

February 28, 2019

Privy Council Office
Attn: Impact and Innovation Unit
Room 1000
85 Sparks Street
Ottawa, Ontario K1A 0A3

Re: Support for Town of Bridgewater's Smart Cities Challenge Finalist Application

To the Smart Cities Challenge jury,

This is a letter confirming the full support and confidence of Employment Solutions Society, Nova Scotia Works Employment Services Centre in the Town of Bridgewater to implement its Energy Poverty Reduction Program as a Smart Cities Challenge finalist.

Our organization assists individuals in the community to prepare for, find and maintain employment. We offer various programs that individuals can access. Our clients have various backgrounds and some struggle with low income, have high barriers and some live in poverty and in which creates high stress.

With the Town of Bridgewater implementing the programs that they have outlined in their Smart Cities Challenge plan will provide individuals in our community access to help.

Yours truly,

Margaret Matthews

Executive Director

215 Dominion St • Bridgewater, Nova Scotia • B4V 2K7

Canada

NOVA SCOTIA

Employment Solutions Society
for Nova Scotia





Lunenburg Campus

February 21, 2019

Privy Council Office
Attn: Impact and Innovation Unit
Room 1000
85 Sparks Street
Ottawa, Ontario K1A 0A3

Re: Support for Town of Bridgewater Smart Cities Challenge

To the Smart Cities Challenge Jury,

This is a letter confirming the full support and confidence of Nova Scotia Community College (NSCC), Lunenburg Campus in the Town of Bridgewater to implement its Energy Poverty Reduction Program as a Smart Cities Challenge finalist.

The NSCC is committed to building Nova Scotia's economy and quality of life through education and innovation. Serving the province through a network of 13 campuses, the College offers over 100 programs in five academic schools, reflecting labour market needs and opportunities in Nova Scotia.

The NSCC Lunenburg Campus has successfully collaborated with the Town of Bridgewater on a number of occasions, most recently on a workshop series for Net Zero housing upgrades. We look forward to an opportunity to be a part of the Smart Cities Challenge initiative by providing training and education that aligns with our mission and values. These types of potential opportunities would include our Work Integrated Learning courses that are encompassed in most programs; partnering with our Women Unlimited program to help showcase women in non-traditional trades and technology workplaces; being integrated in a Coordinated Access Systems (CAS) model with the Town in order to provide information where applicable around training opportunities; and ultimately exploring the creation of new programming options in the areas around Green Energy and Technologies.

The NSCC is focused on making a community impact, as it is one of the four pillars of its strategic plan. The Town of Bridgewater's dedication to eliminating energy poverty will do nothing but benefit its residents and the community as a whole. We support the efforts by the Town to improve energy affordability and housing conditions, while allowing for inclusion and empowerment of marginalized and vulnerable families. This will create new economic opportunities, as well as increased environmental quality helping all of us prosper in a healthy community.

Sincerely,

A handwritten signature in dark ink, appearing to read "A. BLIPSETT".

Blair Lipsett
Academic Chair, School of Access, & School of Trades and Technology
(902) 521-2390

Academic Services
75 High Street
Bridgewater, NS B4V 1V8

nsc.ca



February 27, 2019

Privy Council Office
Attn: Impact and Innovation Unit
Room 1000
85 Sparks Street
Ottawa, Ontario K1A 0A3

Re: Support for Town of Bridgewater's Smart Cities Challenge Finalist Application

To the Smart Cities Challenge jury,

This letter confirms the full support and confidence of QUEST in the Town of Bridgewater to implement its Energy Poverty Reduction Program.

QUEST is a national non-government organization that works to accelerate the adoption of efficient and integrated community-scale energy systems in Canada by informing, inspiring, and connecting decision-makers. QUEST undertakes research, communicates best practices, convenes government, utility, private-sector and community leaders, and works directly with local authorities to enable on-the-ground solutions. QUEST grounds all its activities in the "Smart Energy Community"—a concept that encapsulates the ideal end state of the organization's work.

Energy poverty is an important barrier to becoming a Smart Energy Community because households-at-risk are often unable to avail themselves of existing clean energy programs. As households at risk of energy poverty and low-income households are not always one and the same, programs like the Homewarming program can miss the mark, but they can also be too financially insecure to participate in retrofit or clean energy generation programs like Clean Energy Financing or SolarHomes.

Bridgewater's Energy Poverty Reduction Program would increase the ability of QUEST to enable Smart Energy Communities, by demonstrating successful ways to engage

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Conseil d'administration*

Mike Cleland
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Président du conseil*

Dr. Karen Farbridge
*Vice-Chair
Vice-président*

Paul Kariya
*Member
Membre*

Doug Leighton
*Member
Membre*

Dr. Shahrzad Rahbar
*Member
Membre*

Larry Sault
*Secretary
Secrétaire*

Dr. Vicky Sharpe
*Member
Membre*

*Executive Director/
Directeur exécutif*
Tonja Leach

QUEST
350 rue Albert St. Suite / bureau 1220
Ottawa, ON K1R 1A4
Tel/ Tél : 866-494-2770 Fax/ Téléc : 866-494-2770 Web: www.questcanada.org

households-at-risk of energy poverty in community energy programs. Through Bridgewater's targeted efforts, this underserved segment of the population could be enabled to improve not only their health and wellbeing, but those of the community, by moving to more efficient and cleaner energy sources.

QUEST is a strong proponent of inter-departmental collaboration, and evidence based decision making. As such we support the idea of the coordinate intake process for access to diverse programs, the Household Navigator and long term approach, and the predetermined indicators to monitor progress and actual impact.

If successful, Bridgewater will be the first community in Canada to demonstrate a concrete new approach that fights poverty, transitions the community off fossil fuels, and builds the local economy. This success would build on the momentum Bridgewater has built within Nova Scotia, and Canada-wide, as being a powerhouse for its size and a generous partner when it comes to sharing lessons learned through trail blazing.

As an organization who convenes community stakeholders on both a local and national level, this could be an important step forward for QUEST to address a significant barrier to becoming a Smart Energy Community. In Nova Scotia, the details of this successful program would be disseminated to other municipalities through our Municipal Energy Learning Group, of which the Town of Bridgewater is a keystone member. It would also be important for our QUEST NS Buildings Working Group, which advocates for broad retrofitting and recommissioning of existing building stock. As one of five regional advisors for the Partners for Climate Protection program, QUEST has a portal to share replicable aspects of this program widely within the country.

QUEST is confident in the Town of Bridgewater to achieve the stated vision, and excited to partner with the Town to implement the Energy Poverty Reduction Program.

Yours Sincerely,

A handwritten signature in black ink that reads "Tonja Leach". The script is cursive and fluid, with the first letters of each word being capitalized and prominent.

Tonja Leach
Executive Director, QUEST

RDNT PROPERTY MANAGEMENT, INC.

54 Pine Street, Bridgewater, NS
(902) 523-2945; (902) 521-3236

Robert.dykes@mcgill.ca; nthéoret@hotmail.com; Fax : (902) 334-0204

February 8, 2019

Selection Jury
Smart Cities Innovation Program
Minister of Infrastructure and Communities.
Government of Canada

Members of the Jury,

As the owner of a multiunit apartment building in the Town of Bridgewater, I offer a letter of support for the Energy Poverty Reduction Program submitted to the Smart Cities Innovation program.

The Town of Bridgewater, a small community in rural Nova Scotia has a high unemployment rate and a demographic profile skewed to seniors; much of the population lives on a variety of fixed income sources in an aging housing stock. As individuals, few community members have the means to invest in energy-saving improvements and consequently are locked into high-energy-cost living conditions

The plan to offer an integrated program for all that will allow those living in our community to easily explore ways to reduce energy costs and to improve their lifestyle through a coordinated access portal is an innovative idea for energy poverty and overall energy consumption. I believe that it will improve many people's access otherwise inaccessible programs and that it has a strong likelihood to enhance the quality of life for many in the town while simultaneously reducing the overall energy consumption of the community.

I am particularly intrigued by the Program's inclusion of landlords as participants in the planning and execution of the programmed activities. The strategies being proposed to address the "split-incentives" issues that surround rental housing are particularly innovative. The proposed solutions rely on previously unavailable technologies that now can be used to educate individuals about their energy use. A shared interest in energy consumption, its costs and how to save energy can only strengthen the sense of community. I believe that these new technologies can enhance a sense of shared purpose even at the level of those living in, or managing, individual multiunit buildings.

I offer my wholehearted support for the Proposal submitted by the Town of Bridgewater with the hope that will lift many of our residents out of energy poverty while building a stronger, healthier and energy-efficient community.

Sincerely,



Robert Dykes
Secretary
RDNT Property Management, Inc.



Linda Jensen, B.S.W, R.S.W
SchoolsPlus Facilitator/Parent Navigator
Mail: c/o SSRSB 69 Wentzell Dr.
Bridgewater, NS, B4V 4G9
E-mail: ljensen@ssrsb.ca
Phone: 902 521 9817
Confidential Fax: 902 541 3055

Date Feb 27, 2019

Privy Council Office
Attn: Impact and Innovation Unit
Room 1000
85 Sparks Street
Ottawa, Ontario K1A 0A3

Re: Support for Town of Bridgewater's Smart Cities Challenge Finalist Application

To the Smart Cities Challenge jury,

This is a letter confirming the full support and confidence by SchoolsPlus of the South Shore Regional Education Centre the Town of Bridgewater has the ability to implement its Energy Poverty Reduction Program as a Smart Cities Challenge finalist.

SchoolsPlus is a provincial program in Nova Scotia whose mandate is to support students at risk and their families. The Program is funded jointly by the Departments of Community Services, Justice, Health and Education and Early Intervention. The program is housed in the education system as that is where children and youth are more easily supported and accessed. SchoolsPlus staff work with Interagency Partners who provide services to the student and families in the Town of Bridgewater and surrounding areas to ensure students get the services they require, address gaps in service and reduce duplication of service. We work directly with students and their families.

Many of the students/families we support struggle because of barriers that are a result of low incomes. Housing costs, housing shortages, heating and electrical costs, transportation and fuel costs, unemployment and food costs are some of the main issues we see on a daily basis. We have an emergency fund based on donations from the community that supports emergency needs such as medication, clothing, food, transportation to medical appointments, glasses, lice treatments and more. We see the impact of energy poverty in our schools each day as schools work to feed and clothe the students. We connect family to financial supports and service organizations on a weekly basis. We provide transportation and support families in applications for financial assistance, as well as connections to employment services and more.

People with low income and inadequate housing and inadequate ability to meet their basic needs experience barriers and stressors that reduce their ability to enjoy a good quality of life and health.

As the Town of Bridgewater implements their proposed programs as outlined in their Smart Cities Challenge Plan and works toward solving the energy needs of our most vulnerable residents, we expect that the quality of life and health of our residents will improve. This will result in citizens who are more fully educated, who can meet the needs of themselves and their families, and will reduce the number of students and families at risk in this community.

The Town of Bridgewater encouraged and compensated its citizens for taking time to give important input in this project. Focus groups and opportunities for students and families to contribute their input were frequent and easily accessible. Our program was able to encourage families and individuals to take part and have a voice. The Town developed strong relationships with the community organizations that serve our most vulnerable and marginalized families that will continue into the future. Through this project the residents of the town and surrounding area were clearly given the message that the town is serious about making changes that will improve their lives.

Part of the mandate of SchoolsPlus is to have monthly meetings with the service providers, agencies and services that provide frontline service to our students and families. The Town of Bridgewater has engaged these services and demonstrated a desire to work with us to make a difference for our citizens.

We feel the Coordinated Access System will help people get quick access and help as well as efficient access to a wide variety of services and supports that will improve their lives. SchoolsPlus is committed to supporting the Town of Bridgewater as they move forward with this project.

Sincerely,

A handwritten signature in cursive script that reads "Linda Jensen".

Linda Jensen, BSW, RSW

SchoolsPlus Facilitator/ Parent Navigator

SchoolsPlus of the South Shore Regional Centre for Education

Second Story Women's Centre

18 Dufferin Street, PO Box 821 902-543-1315
Lunenburg, Nova Scotia B0J 2C0 902-640-3044
www.secstory.com
February 20, 2019



Privy Council Office
Attn: Impact and Innovation Unit
Room 1000
85 Sparks Street
Ottawa, Ontario K1A 0A3

Re: Support for Town of Bridgewater's Smart Cities Challenge Finalist Application

To the Smart Cities Challenge Jury:

This is a letter confirming the full support and confidence of Second Story Women's Centre in the Town of Bridgewater's Energy Poverty Reduction Program as a Smart Cities Challenge finalist.

Second Story Women's Centre (www.secstory.com) is a non-profit organization funded through the Nova Scotia Advisory Council on the Status of Women. Its mandate is to provide support and services to women and others who are gender-oppressed, including those who are transgender. Although based in an adjacent town (Lunenburg, Nova Scotia), we provide essential counselling and program services in Bridgewater. We also closely partner with many community organizations in Bridgewater and surrounding areas to align and inform our work. In our work with vulnerable populations, we assist those who are living in poverty or isolation and recognize the serious impact that the risk of energy poverty has on our clients – physical and mental health issues, inability to access services, mobility, transportation, and isolation from family, friends and community.

In its research and design stage, Bridgewater's Energy Poverty Reduction Program has been collaborative, innovative and community-building. Their Energy Poverty Research Program placed the voices of the vulnerable at the centre of the research using focus groups and individual interviews. It also provided an opportunity for service-providing organizations to break down silos and cooperatively recommend best practices that respect the strengths, resiliency and resourcefulness of those impacted by poverty. With community input, it has designed a comprehensive program which will help reduce the cost of energy for individual women and their families - a concrete and evidence-based strategy to reduce poverty in general. It is a long-awaited approach, as we often assist single mothers, the poorest of the poor in Canada.

One of our organization's strategic priorities is 'poverty reduction' with its main goal to develop community partnerships and collaboration focused on reducing poverty among women and other vulnerable populations. The Energy Poverty Reduction Program has

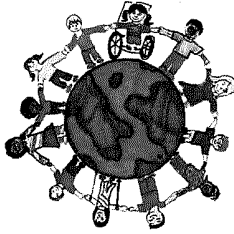
allowed us to greatly move forward in this work, focusing on energy affordability, improved housing conditions, service accessibility, inclusion and empowerment and recognition of the incredible strengths of vulnerable persons. We are also incredibly excited about participating in coordinated access for our clients using data and technology to facilitate wraparound services. While the program has been designed for the Town of Bridgewater, we recognize the innovative nature of the work and its transferability to other communities across Canada.

Second Story Women's Centre is proud to have been part of the research for the Smart Cities application process and is very excited about working in partnership with others to reduce energy poverty in Bridgewater. We have fully participated in the community consultations and information sessions that the Town offered in all of their processes and we felt truly heard and included.

Sincerely,

A handwritten signature in black ink, appearing to read 'Rhonda Lemire', written in a cursive style.

Rhonda Lemire, Executive Director



Small World Learning Centre
352 York Street, Bridgewater
Phone: 902-543-7343
Email: smallworld@ns.aliantzinc.ca
Website: www.smallworldbridgewater.com

February 15, 2019
Privy Council Office
Attn: Impact and Innovation Unit
Room 1000
85 Sparks Street
Ottawa, Ontario K1A 0A3

Re: Support for Town of Bridgewater's Smart Cities Challenge Finalist Application

To the Smart Cities Challenge jury,

This is a letter confirming the full support and confidence of Small World Learning Centre (SWLC) in the Town of Bridgewater to implement its Energy Poverty Reduction Program as a Smart Cities Challenge finalist.

SWLC is a non-profit organization, serving families on the South Shore since 1978 by providing child care for children 18 months to 12 years. We are licensed for 90 spaces and care for 125 children weekly through our part time and full-time programs. Approximately 30% of our families are low income and receive child care subsidy.

On the south shore, the percentage of aging citizens are rapidly increasing. Seniors struggle to "make ends meet" living on Canada and Old Age pensions. They face rising costs of living, age-related illnesses and disabilities. Younger families struggle financially due to limited employment opportunities, student loans, housing, education or the limitations of living in a rural area. We who work in child care, see many families that qualify for child care subsidy but some are not even able to pay the lower rate. These families often resort to un regulated child care or they do not accept employment at all. Poverty reduction could help "at risk" families have licensed regulated care for their children.

SWLC educates our youngest citizens as well as their families regarding sustainability and being an "eco responsible" member of society. As an organization we have taken steps to consume less ourselves by making our centre more energy efficient and growing some of our own food in gardens and by becoming part of Green Schools Nova Scotia.

The Town meetings allowed us to speak of the cost of child care and the financial strain that face many. They were informative and helpful to increase awareness and provided dialogue about the very serious problem of poverty, specifically energy poverty in our area. Meetings were advertised in the Media and included the general public, service clubs, business and service organizations.

If more residents of this area had funds available to obtain even a subsidized rate of quality child care they would be more likely to enrol children in a licensed centre, which in turn would allow them to work and contribute to not only their family income but to raise their own self esteem and provide an example for their children.

Bridgewater is already a leader initiating energy saving promotions and public awareness events. Studies done recently by the Town of Bridgewater prove that there is a huge problem of energy poverty in our community and has been an ongoing problem that "at risk" families are stressed about. This project would be a great model for any other community across the country to follow. Other areas may not be in as great a need as ours but every area can look to ways to reduce the energy consumption and environmental footprint.

- The Town of Bridgewater; offers PACE-a clean energy loan financing which helps residents to reduce the costs associated with energy especially heating and cooling as these are a home's largest energy costs.

Also, the town has an "Energize Bridgewater" initiative, with a focus on implementing the Town's Community Energy Investment Plan.

Energize Bridgewater is a community-wide initiative to accelerate the transition of our community into a "clean energy economy". Started in 2016, the initiative has resulted in practical energy demonstration projects, innovative new partnerships, and new knowledge and skills.

Bridgewater held an Energy Nova Scotia Discovery Fair highlighting sustainability and reducing energy use which was very well attended

Bridgewater Improved access to community transportation by initiating a town bus. It is part the Poverty Reduction Blueprint and is identified as a priority in Nova Scotia's Action Plan for an Aging Population.

- Our organization can be actively involved with efforts because we have over a hundred families with children who are living and concerned with the issues with living in this area. We would share information, encourage and be actively involved with events and efforts to better our community, specifically and specially to reduce energy poverty.
- A community-wide energy poverty initiative could help Bridgewater residents and the community as a whole live better and allow funds to be directed to basic needs such as housing, medical items, child care, healthy food choices and physical activities that they may not have been able to afford because of high energy costs. As well the overall community environment would improve both physically and emotionally. Bridgewater has an excellent bid to receive an award at the 2018 Globe Climate Leadership Awards. <https://www.globeseries.com/forum/awards-en/>

As an organization, we are fully in agreement with the town goals of working together to create a more efficient cooperative society that helps each other live better by reducing stressful and wasteful energy costs. As families become more self reliant and are able to take employment, we will support them by not only offering quality child care but work to increase education to the whole family in areas of conservation, ecology and sustainability.

At a recent conference, The International Network of Michelin Cities, a mayor from Chennai India was so impressed with Bridgewater he said "Never did I think I would come to this conference representing the 8 million people in my city and have our major problems solved by the Town of Bridgewater with only 8500 people but their energy plan did just that". Dec 2017 Bridgewater is a shining example to other

communities, the whole country and beyond because of the ongoing efforts to become more energy efficient right here in our home town!

We are so proud to be part of Bridgewater and the efforts to be responsible efficient consumers of clean energy. Winning the Smart Cities Challenge grant would be a major contribution toward reducing energy poverty in Bridgewater and have a huge positive impact on many lives and the area as a whole!

Therefore, I would say that we are very confident in the Town of Bridgewater to effectively coordinate and work openly and transparently with multiple partner organizations to implement any programs or solutions that can be funded by the Smart Cities Challenge grant.

Donna Stapleton

A handwritten signature in cursive script that reads "Donna Stapleton".

Executive Director,

Small World Learning Centre

SOCIETY OF SAINT VINCENT DE PAUL
Saint Joseph Conference, Bridgewater
123 Pleasant Street
Bridgewater, NS B4V 1N3

February 18, 2019

Privy Council Office
Attn: Impact and Innovation Unit
Room 1000
85 Sparks Street
Ottawa, Ontario K1A 0A3

Re: Support for Town of Bridgewater Smart Cities Challenge Grant Application

To the Smart Cities Challenge jury panel,

The Society of Saint Vincent de Paul, Saint Joseph Conference, would like to confirm its full support and confidence in the Town of Bridgewater's implementation of its Energy Poverty Reduction Program, as a Smart Cities Challenge finalist.

The Society of Saint Vincent de Paul, Saint Joseph Conference has been operating in Lunenburg County for over 30 years. The Society of Saint Vincent de Paul provides immediate financial assistance to help meet basic needs. This includes electricity, fuel, rent, food, medical, dental and other expenses required to live a decent and productive life in our Bridgewater community.

In 2018, 54% of our funds were spent on providing assistance to individuals living in energy poverty, who are spending a large amount of their income just to heat their homes. Individuals have to make a decision between paying rent, paying for groceries, paying for medication or paying for heat and electricity.

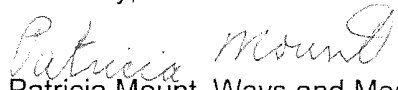
Organizations working together, with a common goal, help to build a strong community. The Town of Bridgewater has been a driving force in the past few months to facilitate this "coming together" of stakeholders interested in the Energy Poverty Program addressing: increasing energy security for residents, reducing and stabilizing energy expenses, reducing greenhouse gas emissions, improving residents' mobility, improving residents' access to community services.

The Society of Saint Vincent de Paul participated in the workshops and forums to provide, to the Town of Bridgewater, data and information related to energy poverty and provide a voice for those who experience a life of poverty.

The Society of Saint Vincent de Paul fully supports the Town of Bridgewater's vision to reduce poverty risk at the household, neighbourhood, and community levels by:

- making affordable energy investments,
- funding energy poverty reduction solutions,
- reducing energy poverty rate,
- improving health of residents,
- increasing resident's quality of life and sense of empowerment and inclusion.

Sincerely,



Patricia Mount, Ways and Means Committee



Patricia Smith

Society of Saint Vincent de Paul, Saint Joseph Conference, Bridgewater

Email: pat_smith_73@msn.com

Tel: 902 530 3001

Souls Harbour Bridgewater
136 Pleasant Street, Bridgewater B4V 1N2
902-530-5030

February 27, 2019

Privy Council
ATTN: Impact and Innovation Unit
Room 1000
85 Sparks Street
Ottawa, Ontario K1A 0A3

RE: Support for the Town of Bridgewater's Smart Cities Challenge Finalist Application

To whom it may concern,

Souls Harbour Bridgewater supports the Town of Bridgewater's Application for the Smart Cities Challenge and is confident in the Town's ability to fulfill the goals of the program.

Souls Harbour Bridgewater is a Christian non-profit Gospel Mission Home which offers a free nutritious meal to people who are struggling while living in poverty, and with mental health and addiction issues. Several clients are housed in low income housing, and others are homeless. While living in poverty, a person is not able to have basic nutritional sustenance, let alone income for transportation or heat/power. It is evident that their health is of a poor quality.

We would welcome this great initiative through the Smart Cities Plan. It would be one step in providing a basic need and improving a person's quality of life.

Please contact me if you have any questions.

Regards,

Vicky Sovie
Manager/ Chaplain
Souls Harbour Bridgewater
Satellite of Souls Harbour RESCUE Mission Nova Scotia



SOUTH SHORE FAMILY RESOURCE ASSOCIATION

821 King Street, Unit 11, Bridgewater, NS
B4V 1B7 (902)543-3119

Correspondence from:

- ☐ Better Together Family Resource, Lunenburg County Site
- ☐ Queens Family Resource Centre, Queens County Site
- ☐ King Street Family Resource Centre, Shelburne County Site
- ☐ Diabv Drop In Centre, Diabv County Site

February 20, 2019

Privy Council Office
Attn: Impact and Innovation Unit
Room 1000
85 Sparks Street
Ottawa, Ontario K1A 0A3

Re: Support for Town of Bridgewater's Smart Cities Challenge Finalist Application

To the Smart Cities Challenge jury,

This is a letter confirming the full support and confidence of the South Shore Family Resource Association in the Town of Bridgewater to implement its Energy Poverty Reduction Program as a Smart Cities Challenge finalist.

The South Shore Family Resource Association has been offering free programming to all families in Lunenburg, Queens and Shelburne counties since 1993. The Association believes in a participant-driven, strengths-based model of program delivery. Programs are designed to increase the opportunities for individuals, families and communities to access supports and services that foster resilience. The work is supported by a strong and dedicated group of staff and volunteers, many of whom are past participants. Our Lunenburg County centre, The Better Together Family Resource Centre, is located in the Town of Bridgewater.

We see and hear from families who struggle with energy poverty every day. They must make hard choices for their families on whether to pay bills such as power/heating/oil, purchase groceries or pay rent. We offer access to supports such as cooking programs, drop in program and continue to keep abreast of any government support programs to help families make informed decisions. We also hold certain funds within our budget for transportation costs to break down barriers for families.

Families who attend our programs will have access to current information and resources on energy assistance that will help with making tough choices. They can serve as a voice of what is working within the community and what is not working in the community by providing feedback to the town through various avenues such as interviews or focus groups.

The South Shore Family Resource Association has full confidence that the Town of Bridgewater can fulfill its vision of reducing energy poverty and we are excited for our participants who will be able to benefit from this Energy Poverty Reduction Program.

Sincerely,

Heather L. Fraser
Executive Director

Growing happy, healthy families in Digby, Lunenburg, Queens and Shelburne Counties
www.southshorefamilyresource.org



South Shore Housing Action Coalition

c/o Public Health Services, NSHA
215 Dominion Street, Suite 200
Bridgewater, NS B4V 2K7
sshousingaction@gmail.com
<http://sshac.ca>



SouthShoreHousingActionCoalition

@sshousingaction

February 22, 2019

Privy Council Office
Attn: Impact and Innovation Unit
Room 1000
85 Sparks Street
Ottawa, Ontario K1A 0A3

Re: Support for Town of Bridgewater Smart Cities Challenge Finalist Application

To the Smart Cities Challenge jury panel,

This is a letter confirming the full support and confidence of the South Shore Housing Action Coalition in the Town of Bridgewater to implement its Energy Poverty Reduction Program as a Smart Cities Challenge finalist.

The South Shore Housing Action Coalition (SSHAC) is a diverse group of community organizations and committed individuals working collaboratively since 2010 to build awareness and facilitate action on the need for quality, safe and affordable housing in Lunenburg and Queens Counties in particular, and Nova Scotia in general.

There is a growing need to address the growing gap between household incomes and the rising cost of living, including energy costs. In 2016, SSHAC completed a housing needs assessment to support understanding of the housing needs in our communities. When asked what residents' concerns were about their housing for the next 5 years, household energy-related costs were identified as the top concern.

The most recent Census of Canada numbers also point to the serious and urgent nature of the need to address issues related to low income and poverty. According to the 2016 Census of Canada, 27.9% of all households are living with core housing need, indicating that their homes are inadequate, unsuitable and/or unaffordable. Among tenants, it's 48.6%. Additionally, 22.4% of households are at, or below the threshold for the Low Income Measure, After Tax. The program proposed by the Town of Bridgewater to address energy poverty will not only have a direct and profound impact on those households living with energy poverty, it will strengthen the whole community; when we all do better, we all do better!

The South Shore Housing Action Coalition is pleased to have been included as a partner in the development of the Town's proposed program. As a community partner, we have been included in conversation about the needs of our community, consulted on issues related to housing and invited to be part of the program as it moves forward. We have been inspired by the work the Town has done to bring all voices on this issue to the table!

During the past few months, the Town has facilitated connections between community stakeholders which has sparked new partnerships and deepened understanding of the challenges vulnerable populations in our community face. Its efforts to include those with lived experience of energy poverty has also started a conversation in our community and is building awareness about the challenges some of our residents face. This is important work. This is work that all communities can be doing, and Bridgewater is creating a process that will inspire others, not only within our region, but in communities across Canada.

Since 2012, the Town of Bridgewater has been an active member of the South Shore Housing Action Coalition and has demonstrated their ability to be change leaders with a vision for a healthier and more sustainability community through various initiatives. Their experience and success in engaging town residents, businesses and community stakeholders over the past few years to imagine Bridgewater differently has resulted in real and tangible community change. They have revitalized the downtown core, implemented a public transit system, engaged the community to develop an open spaces network plan, and have become a leader in energy sustainability planning through Energize Bridgewater. We are confident that they will continue to effectively partner and engage with community and provide strong leadership to address energy poverty through the proposed project.

SSHAC is fully prepared to support the efforts of the Town of Bridgewater to reduce energy poverty in whatever capacity we are able. We are pleased that the Town has identified this important issue to address. We are happy to work with the Town and other partners in an advisory capacity, and to support and facilitate the sharing of information about the project.

Making energy poverty a priority for action is a bold and powerful statement about the commitment of the Town of Bridgewater to its most vulnerable populations and speaks to the vision of the Town of Bridgewater as a diverse, thriving and healthy community. This project will directly improve housing conditions and affordability, promote active transportation, support the local economy through new investment opportunities, and improve the health of all residents of Bridgewater. Beyond these direct impacts, by prioritizing the needs of those living in energy poverty, the Town is not only sending a message to traditionally marginalized populations that their needs are a priority, they have also set the bar for other municipalities to follow suit.

We look forward to hearing that the Town of Bridgewater has been successful in their bid to receive the Smart Cities Challenge grant. An investment by the Smart Cities Challenge in this project is an investment first and foremost in the lives of those living with energy poverty in the Town; and an investment in the health and wellbeing of the population. We're *energized* and excited to work together!

Sincerely,



Nancy Green, Planning Team Member
South Shore Housing Action Coalition



DATE: February 4, 2019

TO: Leon de Vreede, MCIP, LPP
Sustainability Planner, Planning Department, Town of Bridgewater
60 Pleasant Street, Bridgewater, NS B4V 3X9
T: 902-541-4390 F: 902-543-6876
E: Leon.deVreede@bridgewater.ca

CC: Dr. Alexandre Pavlovski, President and CEO, Green Power Laboratories, Inc.

RE: Letter of Interest in the Smart City Project

Dear Mr. de Vreede: I want to thank you for the information related to the Smart City project proposed by the Town of Bridgewater. On behalf of the Computing and Data Analytics research group at Saint Mary's University, I am writing this letter as an expression of interest in the project. As a principal investigator, I have led a team of research associates and students on a wide range of Research and Development projects in Data Science, Machine Learning and Artificial Intelligence. Over last three years, we have collaborated with more than fifteen companies and overseen R&D grants totaling more than \$900,000. A detailed list of the research funding can be found at:

<http://cs.smu.ca/~pawan/research/researchDevelopment.html>

I have discussed the research project with Dr. Alexandre Pavlovski, President and CEO, Green Power Laboratories, Inc. (GPLI). We have collaborated on a number of green energy projects with GPLI. We believe that our research team, in collaborations with GPLI, can make significant contributions towards Big Data Management, Data Science, Machine Learning, and other aspects of Artificial Intelligence in your Smart City project.

If you need any additional information, please let me know. We look forward to working with you.

Pawan Lingras
Professor and Director, Computing and Data Analytics, Mathematics and Computing Science
Saint Mary's University, Halifax, Nova Scotia, Canada B3H 3C3.

e-mail: pawan@cs.smu.ca
Phone: (902)-420-5798 Fax: (902)-420-5035
WWW: <http://www.stmarys.ca>



6 Alexander Bridgewater NS B4V 1G8

Ph: 530-3775 Fax: 530-3776 Web: ssgns.ca

February 23, 2019

Privy Council Office
Attn: Impact and Innovation Unit
Room 1000
85 Sparks Street
Ottawa, Ontario
K1A 0A3

Re: Support for Town of Bridgewater's Smart Cities Challenge Finalist Application

To the Smart Cities Challenge Jury,

This is a letter confirming the full support and confidence of The Ark and Support Services Group Ltd in the Town of Bridgewater to implement its Energy Poverty Reduction Program as a Smart Cities Challenge finalist.

The Ark, being a non profit day program for persons with a disability, is a place where daily vocational training takes place. It is an environment that promotes confidence, skill development and possible work placements in the greater community. Approximately 55 plus participants use The Ark on a daily basis. (thearkns.ca)

Support Services Group Ltd. is a non profit program that services over 100 individuals living alone in the larger community with a disability. We help navigate the community with services such as budgeting, bill payment, food management, medical management, employment support and social engagement opportunities. (ssgns.ca)

I employed as a Coordinator for each program and see a wide variety of poverty concerns that I will touch base on in this letter.

Firstly, and most seriously, is our housing issues when helping individuals find an apartment. Many of our individuals need to or want to move out of long term care facilities that are forcing to close or have aging parents that can no longer care for them. Our mandate is to find affordable, accessible and safe housing that accommodates their needs. This is always a struggle. With a limited budget set by Department of Community Services our choices are few. Also apartment rentals continue to increase forcing a relocation plan which often means accepting lower standards and in some cases the lowest of standards you can imagine.

In 2013 we were fortunate enough to work with a landlord who built an apartment complex that would help support our crisis. Because of our type and quality of services we created an excellent working relationship between Landlord, Tenant and Coordinators and adequate housing became possible. Heating costs were easily affordable, apartments were very accessible and close to work placements and training facilities. As social services like these expand in our community further partnering with Landlords will be extremely essential. With The Town of Bridgewater's help accommodating contractors and with the acceptance of the Smart Cities Challenge we can develop a better model and system for further housing management.

Secondly, accessible internet, transportation, and fitness possibilities are all key to social services such as ours. Many job positing, community schedules, employment opportunities and housing possibilities are found through multi media platforms. Thanks to organizations like United Way who have supplied free phones, fitness passes to the local fitness centre, and in the future possible transportation passes have made a huge impact in the larger community. Many people I have serviced will feel like they have a new lease on life when they are able to swim at the pool twice weekly, or find a job. It improves overall confidence as well as mental and physical health. Many have told me how they feel valued as a contributing community member. United Way single handedly does this and more but for how long and how sustainable? It is the inclusion and validation that will bring our community together. This was very obvious during our focus groups. Participants left feeling relieved about sharing their struggles and had a wider view and further resources on how to approach their circumstance.

Finally, moving forward our organizations can help promote, enhance, navigate resources that currently exists in our community. Both Support Services Group and The Ark contributes daily in changing and guiding lives of community members. We are leaders in our industry of servicing clients in innovated ways. We are person centred and promote individuals and their abilities. We have access to many community resources offering a holistic approach. We also balance relationships with government organizations and non profits to find resources that helps find solutions. It is important that we look towards the future and how to respond to the voices of our community. The Town of Bridgewater has looked close at our programs and have gain further insight on poverty needs. We will continue to work together to discuss further planning by looking at what types of services that can help lower poverty with Bridgewater residents. Help the Town of Bridgewater continue to be an innovator and leader for other communities struggling with the same types of concerns. We aim to continue to collaborate and combine what is working and develop it into a system that is measurable, manageable and effective. A prospective that is undeniably a necessity in helping to build stronger communities. One that makes us feel safe, affordable and sustainable.

Sincerely Yours,

Tabatha Clements

Co-ordinator for Support Services Group Ltd

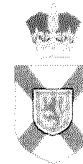
Co-ordinator for The Ark

902-541-0650

Mark Furey

Member of the Legislative Assembly
Lunenburg West

House of Assembly
Nova Scotia



February 28, 2019

Privy Council Office
Attn: Impact and Innovation Unit
Room 1000
85 Sparks Street
Ottawa, Ontario K1A 0A3

Re: Support for Town of Bridgewater's Smart Cities Challenge Finalist Application

To the Smart Cities Challenge Jury,

This is a letter confirming the full support and confidence of the Honourable Mark Furey, MLA for the constituency of Lunenburg West, in the Town of Bridgewater to implement its Energy Poverty Reduction Program as a Smart Cities Challenge finalist.

Nova Scotia is at the front lines of climate change and our actions have positioned us to become a leader on climate change in Canada. The Province has enacted legislation, policies and programs which have proved immensely successful. In 2007, Nova Scotia's Environmental Goals and Sustainable Prosperity Act imposed aggressive targets to reduce greenhouse gas emissions and promote renewable energy. Nova Scotia has now surpassed the federal government's target of reducing greenhouse gas emissions by 30% below 2005 levels. Nova Scotia is adding renewable energy to the grid, achieving its target of 25% of electricity from renewables in 2015, and we are on track to reach 40% by 2020. The Province is now developing a Cap-and-Trade Program to further reduce greenhouse gas emissions.

The impacts of climate change are felt most by those who are vulnerable, and often come in the form of households having difficulty heating their homes and paying for energy bills. The issue of energy poverty is severe in Bridgewater and is representative of challenges faced by communities across Nova Scotia. The Province has acted to relieve this energy burden through the provincially funded Home Warming Program, supporting widespread improvements to low income homes. This program is administered by Efficiency Nova Scotia, one of Bridgewater's core project partners. The Province is highly supportive of Bridgewater advancing efforts to support low-income households through an Energy Poverty Reduction Program.

The Town of Bridgewater is a key driver of the momentum behind the Province's status as a climate change leader. Bridgewater's Town council has been effective at prioritizing social and economic outcomes in its pursuit of climate change policy. Bridgewater's proposed Coordinated Access System which will connect underserved populations to a wide range of support services is a signifier of social prioritization. The Town's broad engagement of residents has demonstrated that its Smart Cities Challenge project will be owned by the community and ensure its long-term success. Bridgewater's Energy

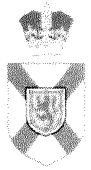
425 King St. Bridgewater, Nova Scotia B4V 1B1 • Phone: 902-530-3883 Fax: 902-530-3919

www.markfurey.ca
markfurey.mla@eastlink.ca

Mark Furey

Member of the Legislative Assembly
Lunenburg West

House of Assembly
Nova Scotia



Poverty Reduction Program addresses the needs of those who would otherwise be left behind by energy transition and instead turns them into beneficiaries.

The Province of Nova Scotia is proud to support the Town of Bridgewater, as they take their innovative program to the national stage to be adopted by communities nation-wide. We are confident that Bridgewater's position as a Smart Cities Challenge finalist will have a positive impact on communities across Nova Scotia and help our Province to continue to lead the way.

Yours truly,

A handwritten signature in cursive script, appearing to read 'Mark Furey'.

Mark Furey MLA
Lunenburg West



THE PREMIER
HALIFAX, NOVA SCOTIA
B3J 2T3

February 28, 2019

Privy Council Office
Attention: Impact and Innovation Unit
85 Sparks Street, Room 1000
Ottawa, ON K1A 0A3

Re: Town of Bridgewater's Smart Cities Challenge Finalist Application

To the Smart Cities Challenge Jury:

The Province of Nova Scotia is pleased to endorse the Town of Bridgewater's Energy Poverty Reduction Program finalist application in the Smart Cities Challenge.

The Town of Bridgewater has consistently demonstrated its ability to implement innovative community-based initiatives on diverse topics such as food security, housing, and transportation. The Town's approach to developing and implementing community-based projects is grounded in extensive consultation and building strong partnerships. Their work aligns with our government's broader provincial initiatives for safe and connected communities.

Within 10 years, the Town aims to lift one in five residents out of energy poverty. This outcome-driven approach to the issue has emerged through successive rounds of community engagement on energy, housing, affordability, quality of life and transportation. The Town is also committed to the better use of data and connected technologies to implement systemic solutions.

I am confident in Bridgewater's ability to successfully implement this transformative project and believe they are a strong, worthy contender in the final round of the Smart Cities Challenge.

Sincerely,

Honourable Stephen McNeil, M.L.A.
Premier of Nova Scotia



www.SalvationArmy.ca

**The Salvation Army
Community & Family Services**

215 Dominion Street
Bridgewater, NS B4V 2K7
Tel: (902) 543-0356
Fax: (902) 543-5471
e-mail: wilson_sutton@can.salvationarmy.org
darlene_sutton@can.salvationarmy.org

February 20, 2019

Privy Council Office
Attn: Impact and Innovation Unit
Room 1000
85 Sparks Street
Ottawa, Ontario K1A 0A3

Re: Support for Town of Bridgewater Smart Cities Challenge Finalist Application

To the Smart Cities Challenge jury,

This is a letter confirming the full support and confidence of The Salvation Army, Bridgewater, NS, in the Town of Bridgewater to implement its Energy Poverty Reduction program as a Smart Cities Challenge finalist.

The Salvation Army is a not for profit organization and has been serving the residents of Lunenburg County since 1891. A part of the mission of our Community and Family Services is to try and help meet the human needs of those in our area. We do that in practical ways, and as much as we are able, to help those who find themselves in difficult situations and may not have anywhere else to turn. Some of the ways that we help outside of Christmas are with food, transportation, rent, medical, clothing, heating assistance.

The Salvation Army in Bridgewater receives request for help from families with heating on a regular basis. There may be a number of reasons, as I see it that contributes to the problem.

- Many people are living below the poverty line and cannot afford the high cost to heat their homes (whether they rent, or own).
- Most energy efficient rental accommodations are out of reach for those on low income
- Many low income people do not own their own homes and are forced to rent accommodations that are not energy efficient. This exasperates the problem for those on low income because often much of their resources go to accommodations.

The effects of energy poverty are very stressful on families which often have long term consequences. I believe that an energy poverty reduction program will allow clients to have a more long term solution to their energy needs instead of a band aid solution that ourselves and many other organizations are providing now.

If clients are not forced to spend the majority of their income on housing, it will give them more money to spend on the other necessities of life such as healthy food. This will lead to a healthier population and longer life expectancy. It will also help relieve some of the day to day stress factors that many face today.

William & Catherine Booth
Founders

André Cox
General

Susan McMillan
Territorial Commander

Wade Budgell
Divisional Commander



www.SalvationArmy.ca

The Salvation Army
Community & Family Services

215 Dominion Street
Bridgewater, NS B4V 2K7
Tel: (902) 543-0356
Fax: (902) 543-5471

e-mail: wilson_sutton@can.salvationarmy.org
darlene_sutton@can.salvationarmy.org

The Town of Bridgewater has worked hard on its Smart Cities Challenge application. They have;

- Met with the people most affected to learn from them firsthand what some of the issues are
- Have met with community organizations such as The Salvation Army and others to gather information of those on the front line helping those in need to learn of what efforts those organizations are doing to help
- Have held a number of workshops and town meetings to gather information and have had discussions with stakeholders as well to keep those involved up to date on the progress of what is happening
- Have completed an Energy Poverty Survey of organizations seeking their experience dealing with people with energy poverty
- Have conducted surveys with other participants of the town to glean their understanding of energy poverty

Currently many people affected by energy poverty do not know what resources are available and we or other organizations only see them when they are in a crisis. With a coordinated system in place people will be made aware that there are programs available that are proactive instead of reactive. The Bridgewater Smart Cities program will work with those affected to coordinate access to programs and empower those that are at risk of energy poverty before they are negatively affected.

I feel that a successful plan by the town of Bridgewater can be a model used by other towns and cities across Canada.

A community-wide energy poverty initiative will have great benefits for the community and for its residents.

- Families will be able to meet their energy needs and will not need to choose between heating their homes or purchasing other basic necessities
- Families will be able to direct their income to eating healthier
- I feel that when families are able to adequately heat their homes, it will lead to healthier people and less drain on our medical system

The Salvation Army in Bridgewater is pleased to support the town of Bridgewater in any way it can in addressing the problem of Energy Poverty and we are also willing to work with the town in any way that we can to help in the process.

If you have any questions, please do not hesitate to be in contact with me.

Wilson Sutton
Major
Copy: File

William & Catherine Booth
Founders

André Cox
General

Susan McMillan
Territorial Commander

Wade Budgell
Divisional Commander

February 28, 2019

Privy Council Office
ATTENTION: Impact and Innovation Unit
Room 1000
85 Sparks Street
Ottawa, ON K1A 0A3

RE: Support for Town of Bridgewater's Smart Cities Challenge Finalist Application

To the Smart Cities Challenge Jury,

We are writing this letter to show support of the Bridgewater ERP Energy Management Information System Concept for the Town of Bridgewater, Nova Scotia.

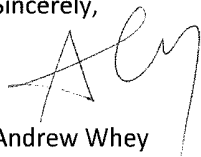
As the Town is a long-term client of ours, we have worked on many software improvement and software implementation projects together. We feel that this project is beneficial to the community, and as a Canadian company we are happy to see clients like the Town of Bridgewater seek ways to improve the socio-economic conditions of their stakeholders, including reducing energy poverty. We look forward to receiving additional information about this project and determining how we may be involved.

Please note that TownSuite Municipal Software is not an expert in EMIS, rather we make and maintain municipal software that focuses on finance, asset and work management, land management, recreation management, payroll, reporting and electronic services. We do however, see parts of the EMIS concept that could be beneficial to both the Town and even other municipalities who may want to adapt a similar process in the future. This includes improving some of our interfaces and dashboards to allow clients to see more insightful metrics regarding energy usage. Having additional metrics available would also help give the Town access to make more intelligent decisions regarding energy usage and hopefully design a system that could be useable by other municipalities as they take on more environmental responsibility in the years to come. Displaying visual metrics in GIS is also rich in value as it provides a view of complicated data that could be difficult for the average person to view and analyze.

With that said; we would like it noted that the scope of this project is quite ambitious and as the Town's ERP, any potential participation on our part would be limited to portions we believe could benefit our municipal clients over the long term. Some of that work could be included in an existing TownSuite Municipal Software product subscription, or through the implementation of additional TownSuite Municipal Software products. Any mutually accepted items outside of our product scope would be subject to additional cost.

For further discussion, or if you have any questions please feel free to contact Sarah Hobbs at 1-800-408-3313 X 5033 or by email at sarah.hobbs@townsuite.com. She can coordinate a meeting with any individuals that would need to be involved from TownSuite.

Sincerely,



Andrew Whey
CEO

P. O. Box 241 Gander NL A1V 1W6 Canada
p: 1.800.408.3313 f: 709.256.3031 e: marketing@townsuite.com
www.townsuite.com



February 19, 2019

Privy Council Office
ATTN: Impact and Innovation Unit
Room 1000
85 Sparks Street
Ottawa, Ontario K1A 0A3

Re: Support for the Town of Bridgewater's Smart Cities Challenge Finalist Application

To whom it may concern,

The United Way of Lunenburg County has complete confidence in the Town of Bridgewater's abilities to fulfil all the goals as outlined in their Smart Cities Challenge application. They have a strong and capable management and implementation team, positive ties to our community and have the full support of their Municipal Council.

As the service centre for the South Shore of Nova Scotia the Town of Bridgewater has many amenities that people find appealing. This includes that the fact that the town is small enough to be walkable, it hosts most of the business, shopping and professional services, has a wide range of good recreational facilities, has a variety of housing options and a newly introduced public transit. Because of this the community attracts many people from a lower socioeconomic scale. In fact the Town of Bridgewater has the lowest average household income in Lunenburg County and according to a recent South Shore Housing Action Coalition (SSHAC) report 27.9% of home owners and 48.6% of renters find themselves in core housing need. The core housing needs of residents in Bridgewater is the highest in Lunenburg County.

The United Way of Lunenburg County is an organization that operates several local programs and financially supports local agencies that help support people living in poverty, low income and marginalized populations. The majority of our community investments are to provide FREE opportunities and material resources to people that would struggle or be unable to pay for them themselves. Some examples would include our Bikes for Kids program, youth programs, Coats for Kids – Teens and Adults Too, our iPhone and Laptop program, recreation passes for swimming and skating, quality used sports equipment, access to sports, recreation and cultural activities for kids and youth, transit, day camps and organizations that provide money to help people who struggle to pay their power or heating bills. In fact, our local investment in one such

United Way Lunenburg County
PO Box 244, Bridgewater NS B4V 2W9
902-527-3072
Lunenburgcounty.unitedway.ca

agency represents 35% of their annual budget and 60% of their budget is used to help people with their energy and heating bills.

People living with low income and in inadequate housing experience several stressors that reduces their ability to enjoy a good quality of life and health. As the Town of Bridgewater implements the programs outlined in their Smart Cities Challenge plan and focuses on solving the energy needs of our communities most vulnerable residents it is our expectation that these stressors will be reduced and we as an organization can redirect financial and human resources to help individuals and families improve other aspects of their lives.

The United Way of Lunenburg County has a strong working relationship with Town of Bridgewater and all those agencies and government offices that support low income people in our community. We used these positive relationships to help the Town of Bridgewater engage these agencies and the clients that they serve. We feel that the proposed Coordinated Access System will help people get quick access to help and will efficiently provide additional access to a wide variety of programs and services that will benefit their lives.

If you have any questions or require additional information, please do not hesitate to ask.

Sincerely yours,

Michael Graves
Coordinator
office@lunenburgcounty.unitedway.ca
902-530-3072 (Voice mail)
902-521-4704 (Cell)

United Way Lunenburg County
Improving lives locally.
www.lunenburgcounty.unitedway.ca

Give. Volunteer. Act.

Town of Bridgewater Final Application to the Smart Cities Challenge in the \$5M Prize Category

Confidential Annex

This confidential annex contains a letter of support from the Vancity Community Investment Bank. It was requested of the Town of Bridgewater that the letter be kept confidential, hence its inclusion in this section.

The letter provides supplementary information related to the following chapters:

- **Chapter 3: Governance** - on page 41, under the “Investment System” heading, Vancity Community Investment Bank describes its interest in partnering with the Town of Bridgewater to deliver the Energy Poverty Reduction Program.
- **Chapter 9: Financial** – the letter provides strength to the financial concepts explained in this chapter, as well as the investment-worthiness of the proposed investment opportunities.

February 21st, 2019

Privy Council Office
Attn: Impact and Innovation Unit
Room 1000
85 Sparks Street
Ottawa, Ontario K1A 0A3

ATIA - 19(1)

Re: Support for Town of Bridgewater's Smart Cities Challenge Finalist Application

To the Smart Cities Challenge jury,

This is a letter confirming the support of Vancity Community Investment Bank for the Town of Bridgewater's Energy Poverty Reduction Program as a Smart Cities Challenge finalist.

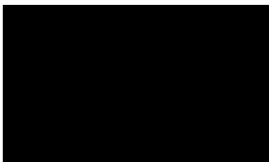
Vancity Community Investment Bank is a Schedule 1 Charter Bank regulated by OSFI. We are the only Canadian bank committed to partnering exclusively with organizations focused on driving positive change. We were born from the values-based and community-first model sharpened over seventy years by Vancity, our parent financial co-operative with over half a million members.

As a values-based bank, we are focused on supporting opportunities that drive meaningful change at the community level. From our discussions with the Town of Bridgewater, we recognize the impressive amount of community engagement and business planning in developing an Energy Poverty Reduction Program that will address the needs of the community while creating opportunities for localizing this core economic infrastructure. Market-driven opportunities that deliver holistic impacts are exactly what VCIB is designed to help grow as part of a larger and growing social finance ecosystem.

Transitioning our energy systems towards a low-carbon world will require a long-term focus and the engagement of private sector investment. Doing so while advancing goals of equity and inclusion is an even more worthy target. We see a strong commitment from the Town of Bridgewater to implement impactful and economically viable opportunities to reduce energy poverty and are excited to discuss partnering opportunities with the Town of Bridgewater to implement the Energy Poverty Reduction Program in the years ahead as our national capabilities continue to grow.

If you have any questions regarding our letter, please don't hesitate to contact me at the information below.

Sincerely,



Vancity Community Investment Bank

Ph: [REDACTED]

Em: [REDACTED]

Preliminary Privacy Impact Assessment

Project Name: Town of Bridgewater – Energy Poverty Reduction Program

Document Version, Review and Approval History

Version	Author	Nature of Change	Date
0.1	Greg Lypowy	Initial Draft	07-Feb-2019
0.2	Greg Lypowy	Incorporated feedback from: Greg Goubko, David Muise, Amanda Shupe, Leon de Vreede (Town of Bridgewater); and, Alexandre Pavlovski (Green Power Labs)	25-Feb-2019
0.3	Greg Lypowy	Incorporated feedback from: Greg Goubko (Town of Bridgewater); Alexandre Pavlovski (Green Power Labs); and, Karlie Gurski (OIPCNS)	27-Feb-2019
Final	Greg Lypowy	Incorporated remaining feedback from Town of Bridgewater, Green Power Labs, and OIPCNS.	01-Mar-2019

A. General Information

1. Name of Program or Service

Town of Bridgewater – Energy Poverty Reduction Program

2. Name of Department, Branch and Program Area

Planning Department

3. Name of Program or Service Representative

Leon de Vreede, Sustainability Planner

4. Contact Information

T: 902-541-4390

E: Leon.deVreede@bridgewater.ca

B. Description

Description of the Initiative

The Town of Bridgewater's *Energy Poverty Reduction Program* follows closely on the analysis and recommendations of its Community Energy Investment Plan (CEIP). In brief, the Plan calls for the mobilization of significant public and private sector resources to move the community toward a clean

energy economy. It identifies \$374 million in recommended improvements to the community's building stock, its energy systems, and its vehicle fleets. Furthermore, the Plan calculates the substantial return on investment that can be generated through these improvements, thanks to the prospect of reducing energy imports to the community, and the sale of new locally-generated energy. With funding support from a successful proposal to the Smart Cities challenge, this program has the goal of reducing the energy poverty rate in Bridgewater by half over a 10-year timeframe.

The Energy Poverty Reduction Program (EPRP) builds on the CEIP by viewing it through an important new social lens: how can these desired improvements in housing, transportation and energy systems also be affordable and beneficial to those most at risk of not having the energy they need?

Between literature reviews, consultations with outside experts, and discussions with local community service organizations, staff propose an expanded view of energy poverty, which is that Bridgewater households are at risk of falling into energy poverty as long as they lack an affordable and secure energy system in their home, their neighbourhood, their community, and their region.

The Town of Bridgewater (the Town) already has familiarity with the idea of energy management, as it exercises it proactively in the maintenance of its facilities to manage and ultimately reduce spending on energy. The same thing applies to households experiencing energy poverty – most know first-hand the critical importance of managing their energy expenses. The community stories staff has been collecting have been truly stunning in this regard: families are turning off their heat for days at a time in the middle of winter to be able to afford their next power bill, or going without light and powered devices at the expense of their health and wellbeing. From an energy management perspective, Bridgewater residents who experience energy poverty often already have advanced skills in energy management. What they tend to lack is energy efficient infrastructure to work with, and adequate control over their home and transportation options. The EPRP is about empowering households to manage their energy in the ways they need to be healthy and well, and to meet their financial needs.

In developing the Community Energy Investment Plan, the Town has expressed a public commitment to help the community do just this. In other words, the Town is taking on a role as steward of the community's energy management efforts – an effort that it can now begin to share with its residents, its property owners, and its businesses and non-profit organizations. The Town can do so by designing energy management support services for households, property owners, neighbourhoods, and the community at large. This principle is carried throughout the Energy Poverty Reduction Program's design.

Through the intense focus on this topic which has been enabled by the Town's participation in the Smart Cities Challenge program, and through the receipt of its Finalist status, what has emerged is that the Town has a unique opportunity to create a powerful new type of community program that:

- Builds on the Town's existing plans and commitments;
- Brings new partners to the table, especially community service organizations;
- Helps reduce not only energy poverty but is a poverty reduction strategy in general;
- Can be implemented through an innovative blend of municipal services and community partnerships; and,
- Is a "first" in the Canadian context but can be replicated by communities of any size.

These outcomes are enhanced through the improved use of data and connected technologies using a "smart cities" approach to problem solving. Ongoing data collection will allow for outcomes-focused monitoring of success indicators. For example, rather than counting the number of people who have participated in the program, one aspect of the success of the program may be based on the relative improvement in quality of life for the clients. The Town will be developing a set of desired program outcomes, as well as the data model and indicators it requires to monitor to achieve the desired outcomes.

The anticipated benefits of the EPRP are described in a set of desired program outcomes:

Component	Desired Outcomes
Overall Program	<ul style="list-style-type: none"> ▪ Reduce energy poverty in Bridgewater ▪ Inspire other communities to adopt similar energy poverty reduction programs
Coordinated Access System	<ul style="list-style-type: none"> ▪ Support residents at risk of energy poverty with improved coordination and navigation among services and community supports ▪ Improve the health and quality of life for residents at risk of energy poverty ▪ Increase the efficiency and effectiveness of services provided by community service organizations that serve residents at risk of energy poverty ▪ Shift spending among community service organizations from emergency energy-related uses toward long-term and structural solutions to poverty and energy poverty
Housing Energy Management System	<ul style="list-style-type: none"> ▪ Improve the energy efficiency of the homes and apartments of residents at risk of energy poverty ▪ Create highly energy efficient new housing for residents at risk of energy poverty ▪ Empower residents at risk of energy poverty, as well as landlords who provide them with housing, to better manage their energy use ▪ Decrease housing costs for residents at risk of energy poverty ▪ Improve relationships between landlords and renters at risk of energy poverty
Community Energy Systems	<ul style="list-style-type: none"> ▪ Plan and implement community-scale energy systems that reduce and stabilize energy costs for residents, and provide dividends for local investors
Mobility Improvement System	<ul style="list-style-type: none"> ▪ Improve accessibility and affordability of transportation in neighbourhoods where people at risk of energy poverty live ▪ Increase the ability of residents at risk of energy poverty to meet their mobility needs
Investment System	<ul style="list-style-type: none"> ▪ Achieve sufficient public and private funding and investment to capitalize energy poverty reduction efforts ▪ Increase the income of residents at risk of energy poverty through participation in the green economy

More information on the Energy Poverty Reduction Program is available in the final proposal document for the Smart Cities Challenge, submitted by the Town of Bridgewater.

Scope of this Preliminary PIA (PPIA)

The EPRP will serve its clients through an interconnected set of services, supported by the following conceptual services and related information systems:

Coordinated Access System (CAS)

Existing community services will provide a single coordinated intake process for at-risk households and will refer them to the community-based services they require. Among those services will be the Energy Poverty Reduction Program. A Household Navigator will provide a consistent point of contact and maintain a long-term connection with a client household. The Navigator will refer the household, or the household's landlord, to the Technical Navigator if the client is in need of energy improvements to the home. A Coordinated Access System will be provisioned on a data platform residing outside of the Town's municipal IT services and allow community organizations and service providers to collect and manage data on clients who are housing-insecure and homeless.

Municipal Enterprise Resource Planning (ERP) System (MERPS)

The Town will provision a *Municipal Enterprise Resource Planning System* (MERPS) to manage core information related to the services and solutions being provided by the EPRP. While this has not been confirmed at the time of writing this PPIA, it is envisioned that this data platform will leverage an existing municipal enterprise resource planning platform in use by the Town of Bridgewater.

The MERPS data platform will include three core sub-systems:

- **Energy Management Information System (EMIS)**

An Energy Management Information System is an important element of a comprehensive energy management program in any municipality. This system provides relevant information to key individuals and departments in municipalities, enabling them to improve energy performance, related energy use, cost and carbon footprint in a low-carbon economy. The EMIS is best characterized by its deliverables, features, elements and support. Deliverables include the early detection of poor energy solution performance, support for decision making and effective energy reporting. Features of an EMIS include: a user focused web-based dashboard, the collection of storage of energy- and property-related data in a usable format, the calculation of effective targets for energy use, and comparison of actual consumption with these targets. Elements include sensors, energy meters, hardware and software (these may already exist as process and business performance monitoring systems). Support refers to system services, future proofing of the technology and performance upgrades.

- **Housing Energy Management System (HEMS)**

This key sub-system of the MERPS will provide property owners with turn-key energy management, planning, and retrofit, and financing services. The Housing Energy Management System will support the program by managing information on energy solutions, their performance, and outcomes information (aggregated from participants, not identified) for retrofits of existing housing and the construction of highly efficient new housing units.

- **Mobility Improvement System (MIS)**

The Town of Bridgewater will employ the *Coordinated Access System* and the *Housing Energy Management System* to identify where mobility improvements are needed in the community, and will work to plan and implement those improvements. Public transit service and active transportation infrastructure improvements are the primary areas of focus, though paratransit and ride sharing services may eventually form part of the service model as well. This sub-system will manage information related to studying and designing changes to transit routes/services.

Community Energy System

With the help of Energy Service Provider (ESP) partners, the Town of Bridgewater will supplement energy improvements in individual homes by planning, developing, and financing, and possibly operating neighbourhood and community-scale energy systems such as solar farms, district heating systems, and microgrids. These systems will feed secure and affordable energy to participating properties, and earn dividends for their investors. Supporting the Town, ESPs will be connected to a technology platform that will coordinate the households' and the municipality's real estate and energy assets and energy solutions. This data platform will reside on custom cloud servers outside of the Town's municipal IT services and will provide all necessary analytics and controls data for real time operation (data collection) and planning/reporting operations.

EPRP Investment System

Investors will play a key role in allowing energy interventions/solutions to be applied to a household in need. A financial platform (the EPRP Investment System) will be provisioned to ensure investment opportunities and related information are made available to community investors. The system will be managed in part by the Town of Bridgewater, and in part by an arms-length investment entity.

The EPRP Investment system will consist of two separate systems:

- **Municipal Capitalization System (MCS)** – This is an internal application only accessed by Town employees, with budgeting characteristics at its core. The MCS will be responsible for: assembling energy solution opportunities, details and outcomes; reporting upon new opportunities and investments made to investors and specialized financing proponents; and, sharing opportunity details with a counterpart system, the *Financial Investment Vehicle*.
- **Financial Investment Vehicle (FIV)** – This system will be external to the Town, hosted by an existing or newly-created organization. The FIV will support traditional financing activities, including: managing information related to investments, procurement and disbursements (with data shared by the MCS); managing information on EPRP energy solution assets; and reporting upon new opportunities and investments made to community investors and traditional investors.

At the time of writing of this PPIA, no decisions had been made on the IT solutions to be implemented in support of the EPRP. However, the following application platforms were under consideration for use by the EPRP for the following functions:

TownSuite Municipal Software – [as MERPS]

As the Town's existing database platform for its municipal accounting, financial, and permitting services, TownSuite is ideally situated to support the Town's service expansion into community energy management services. TownSuite already has modular components available to provide asset management services as well as energy utility management services, and at least one municipality in Nova Scotia currently uses it for its electrical utility. It is envisioned that TownSuite could provide the data engine needed to power the *Housing Energy Management System*, the *Energy Management Information System* and the *Mobility Improvement System* program components, and would support stakeholders with its existing *Geographic Information System* (GIS) and *Permitting* modules, as well as build off of the financials and budgeting foundational application for MCS operations.

Homeless Individuals and Families Information System (HIFIS) – [as EPRP Intake System]

This national database currently supports community organizations and service providers by helping them to collect and manage data on clients who are housing insecure and homeless. Town of Bridgewater staff have learned that the HIFIS system is undergoing upgrades and could potentially be used to serve a broader range of clients with housing challenges, including those who live in energy poverty. This data platform would reside outside of the Town's municipal services and be used by community partners for the *Coordinated Access System* that would support households at risk.

Note: If the HIFIS system is selected as the data platform for the EPRP Intake System, the Town will have to work through the details of a data sharing agreement with the Federal Government. Of particular interest would be what data items will need to be added to its database (to support EPRP), and what data would (and would not) be shared with Employment and Social Development Canada. (A risk based upon this issue has been included in Section G.)

This Preliminary PIA will assess the privacy of data as it is collected used disclosed and retained by the identified services, systems and their related stakeholders.

It will not, however, assess the TownSuite and HIFIS systems since their use for the EPR Program has not been confirmed.

Elements of Information or Data

At the time of writing of this PPIA, details related to the exact data elements (personal information) to be collected by the EPRP we not finalized. However, the categories of data to be collected, and a description of what elements each may encompass is included below.

Category	Description
HOUSEHOLD (HH)	
HH Demographics	Includes identification of a household contact (e.g. name, address, telephone) and a profile of the household family structure (number of family members, ages of children).
HH Economic Dependency Profile	Indicates the financial supports the HH is receiving (e.g. Employment Insurance, Old Age Security, Canada Pension Plan).
HH Income	Sources of income from all HH members.
HH Detailed Expenditures	Details related to household consumption expenditures (e.g. rent and utilities; furnishings, household equipment and other goods and services related to the dwelling and property; health-related; transport-related; education-related).
HH Housing	Details of current housing situation (e.g. house or apartment, renting or owner).

Category	Description
HH Transportation Mode	Primary transportation method(s) for all household members, for all activities. Combines with <i>HH Commuting Profile</i> to create <i>HH Mobility data</i> (in the Data Flow Diagram)
HH Commuting Profile	Details related to commuting (e.g. number of HH members at a time, routes taken including GPS information). Combines with <i>HH Transportation Mode</i> to create <i>HH Mobility data</i> (in the Data Flow Diagram).
HH Financial Information	Details relating to all household finances (e.g. income, loans, financial support programs).
HH Health Indicators	Self-reported information such as: physical health, mental health and well-being, missed days of work/school, financial impacts, air temperature and quality within the home, health/community supports system usage. Ultimately, this information will be aligned with social determinants of health to track the effect of reduced energy poverty on the overall health of the HH.
PROPERTY/ASSET (PA)	
PA Property Owner Demographics	Includes identification information for the property owner (e.g. name, address, telephone).
PA Physical/Environmental Features**	Details of the physical features of the building(s) on the property (e.g. building type and vintage, floorspace, number of floors), house heating system.
PA Energy Features**	Details of the energy solution(s) installed in the building(s) on the property (e.g. environmental features of the building, heat source, installed energy solutions, ability to install new energy solutions).
PA Appliances**	Type and number of appliances installed in the building.
PA Energy Usage	Energy usage data for the building/home.
PA Energy Audit	Results of an energy audit completed for a building/home.
PA Financial Information	Financial information related to the property (and Property Owner).

Category	Description
PA Property Indicators	Indicators/data used to track changes to the property/building resulting from energy solution installation.
EPR SOLUTIONS AND SERVICES (EP)	
EP Community Energy Solutions**	Information on community-based energy solutions available to participants in the EPR Program.
EP HH Energy Solutions**	Details (technical and financial) on the energy solution(s) installed in a building/home.
INVESTMENT (IN)	
IN Investor Demographics	Includes identification information for the investor (e.g. name, address, telephone), and relevant financial details.
IN Opportunities**	Technical (e.g. energy efficiency rating, energy source) and financial details (e.g. costs, projected savings and returns on investment) for new energy solution implementations. These are presented to investors as opportunities for investment.
IN Solution Details**	Technical and financial details for energy solutions that have been implemented.
ADMINISTRATIVE	
EPRP Service Providers**	Information on Energy Management Service Providers that have registered their services with the EPRP.
Environmental Data**	General environmental information used to inform energy audit results, and energy solutions under consideration.

** - denotes categories that are not expected to contain personal information.

Legal Authority for the Collection, Use and Disclosure of Personal Information

The prevailing legislation that will govern the activities of the EPR Program will be Nova Scotia's Municipal Government act.

Municipal Government Act (MGA) of Nova Scotia

According to the MGA, Personal Information is defined as recorded information about an identifiable individual, including:

- Name, address or telephone number;

- Race, national or ethnic origin, colour, or religious or political beliefs or associations;
- Age, sex, sexual orientation, marital status or family status;
- An identifying number, symbol or other particular assigned to the individual;
- Fingerprints, blood type or inheritable characteristics;
- Information about health-care history, including a physical or mental disability;
- Information about educational, financial, criminal or employment history;
- Anyone else's opinions about the individual; and,
- The individual's personal views or opinions, except if they are about someone else.

Similar to the Freedom of Information and Protection of Privacy Act (FOIPOP) Act, Part XX of the Municipal Government Act (MGA) requires that municipalities protect individuals' personal privacy by only collecting, using and disclosing Personal Information in their custody or control in the manner authorized by the Act and to protect Personal Information by making reasonable security arrangements against such risks as unauthorized collection, use, disclosure and disposal. Regarding the authority to collect, disclose and use personal information, the act includes the following:

- Section 483(1)(c) of the MGA allows a municipality to **collect** personal information that is necessary for operating a program or activity of the municipality;
- Section 485(1)(a) authorizes a municipality to **use** personal information for the purpose for which it was obtained or for a use compatible with that purpose;
- Section 485(1)(b) authorizes a municipality to **use** personal information after having identified the information to the individual and received their consent;
- Section 485(3) authorizes a municipality to **use** personal information for performing the statutory duties of, or for operating a legally authorized program of the municipality; and,
- Section 485(2) authorizes a municipality to **disclose** personal information in accordance with the MGA or another enactment, for the purpose for which it was obtained or a compatible purpose, to employees of a municipality if the information is necessary for the performance of their duties, and to a municipality for the necessary requirements of municipal operation.

Under the MGA, the Town of Bridgewater can collect personal information under authority described in the Act, including if the personal information relates directly to and is necessary for the activity of providing a service.

Also, the Town may allow a service provider to access or maintain personal information held on behalf of the Town, so long as the service provider protects the privacy of all personal information as outlined in a Service Level Agreement (SLA) it has signed with the Town.

Personal Health Information Act (PHIA) of Nova Scotia

PHIA governs the collection, use, disclosure, retention and disposal/destruction of personal health information. Any information that relates to the application, assessment, eligibility and provision of health care to an individual is subject to PHIA.

According to the Act, PHIA applies to custodians of personal health information who are collecting, using and disclosing the information in the provision or support of health care. Custodians are defined as individuals or organizations who have custody or control of personal health information and who are listed in the Act or prescribed by regulation. These include regulated health care professionals (e.g. physicians, nurse practitioners, etc.), the District Health Authority/IWK, the Minister of Health and Wellness and through Regulations, home care agencies (including LTC facilities) that are approved by the DHW and have a service agreement with the Nova Scotia Health Authority (NSHA) or the IWK.

The EPRP will be collecting self-reported health information from program participants in order to monitor the effectiveness of the energy solutions being provided by the program. That is, the program will be collecting health information (but not Health Card Number) from participants, but not for a purpose directly related to health care. Seeing an improvement in the health of households is an important goal of the program, but no healthcare-related services or interventions are being provided by the program.

Due to this, and the fact that PHIA does not recognize the Town of Bridgewater as a custodian of health information, PHIA does not apply to the EPRP.

Description of Information Flow

There are two primary clients, or beneficiaries, of the EPRP:

Households (HH)	Residents of the Town who are at risk of energy poverty (estimated at 40% of Bridgewater's population); and,
Property Owners (PO)	Owners of properties inhabited by households that are at risk of energy poverty.

In situations where the household-at-risk owns the home they live in, these two clients are one and the same. For a large number of households-at-risk, however, home ownership is not affordable, and rental housing is their only option. In this case, the Property Owner is the household's landlord. Since the Town has a high rate of rental housing (43% according to Statistics Canada), it is estimated that the majority of clients in the EPRP will be landlords. In order to account for this dual definition of Property Owner (i.e. either being the Household, or the landlord) the data flow diagrams that follow will contain some duplication of data flow.

In addition to these two primary clients, the other stakeholders of the EPRP include:

Household Navigator (HHNav)	An employee of a Community Service Organization who is formally registered as a member of the EPR Program. The HHNav <u>may</u> already have a relationship with the HH through their Community Service Organization, and would inform them of the EPRP. Or, they will have been contacted by a HH who has learned about the EPRP through some other marketing channel. Note: It is not a requirement of the EPRP that a HH is receiving services from a Community Service Organization. The HHNav helps the HH navigate through the EPR program, and will have an important role to play if a HH is not the property owner.
Technical Navigator (TNav)	This is an employee of the Town who is responsible for: (a) confirming the HHNav's assessment of a HH's/PO's eligibility for the program; and (b) helping the HH/PO with all technical aspects of the EPRP. This role will liaise with the HH/PO and the Energy Management Service Provider (EMSP) to select an energy solution for the HH, and will liaise with the Investment Coordinator on the funding for that solution.
EMSP Staff	Staff from an Energy Service Provider or other partner who will complete an energy audit for a property, and suggest prospective energy solutions.

ToB Planning & Operations	A Town employee who will process permit requests, consider changes to bus routes to address mobility issues of households, and will provide aggregated information to the public on energy solution performance and outcomes.
Investors	Investors will learn about opportunities to support installation of an energy solution for a HH, or the progress/outcome of their current investments. They may include private companies, foundations and venture capitalists, as well as financial investors seeking a return on investment from housing and community energy systems.
Specialized Funders	These are investors who are not expecting financial returns on their investments, but invest for reasons aligned with their mandates or vision statements. Examples of these types of investors would be the Provincial or Federal governments, the Canada Mortgage and Housing Corporation (CMHC), and EfficiencyNS.
Investment Coordinator (IC)	An employee of the Town who endeavours to keep Specialized Funders updated on both new opportunities for investment, and the progress/outcome of their existing investments

At the time of writing of this PPIA, neither detailed process flows nor the IT solutions that would be implemented by the EPRP had been finalized by the Town of Bridgewater. These details will be finalized during the first stages of the EPRP's implementation, and the entire program will be evaluated from a privacy perspective through the completion of a comprehensive PIA.

Therefore, the following depictions of process flows for the EPR Program are based upon the program design at the time of writing.

There are three overarching processes that will define how data flows through the EPRP: *Intake*, *Service Delivery/Operations*, and *Monitoring*. Each of these processes, and the data that flows through them, is defined in the following section along with the legal authority for each collection, use, and disclosure of personal information.

I. Intake

A resident of the Town (Household) who is experiencing energy poverty will first learn about the EPRP either through their existing relationship with a Community Service Organization (CSO) in the community, or by having heard of the program through some other marketing channel. Regardless of how they learned about the program, the HH will be directed to contact a CSO resource who is registered with the EPR program (the HH Navigator). The HH Navigator will meet with the HH and identify whether they could benefit from participation in the Energy Poverty Reduction Program. If it appears that they would benefit, then the HH Navigator will receive and assess an application from the HH. If the application passes the EPRP program eligibility criteria, then the HH Navigator will pass details on to the Technical Navigator for their confirmation of the application, and initiates the Intake process. If the HH is not deemed to qualify for the program, at any point, then their application is destroyed and no data is retained in the CAS.

Note: At the time of writing of this PPIA, the details of the application process had not been finalized. As a result, this process is not depicted in the data flow that follows. This flow of information, and the criteria

used to judge whether a HH qualifies for the program, will need to be fully analyzed in the comprehensive PIA for this program.

During the Intake process the Household and/or the property is registered in the Energy Poverty Reduction Program, and they would sign a contract with the program that includes their consent to the collection, use, disclosure, and retention of certain personal information needed for the program.

The following diagram depicts the flow of information through the Intake process:

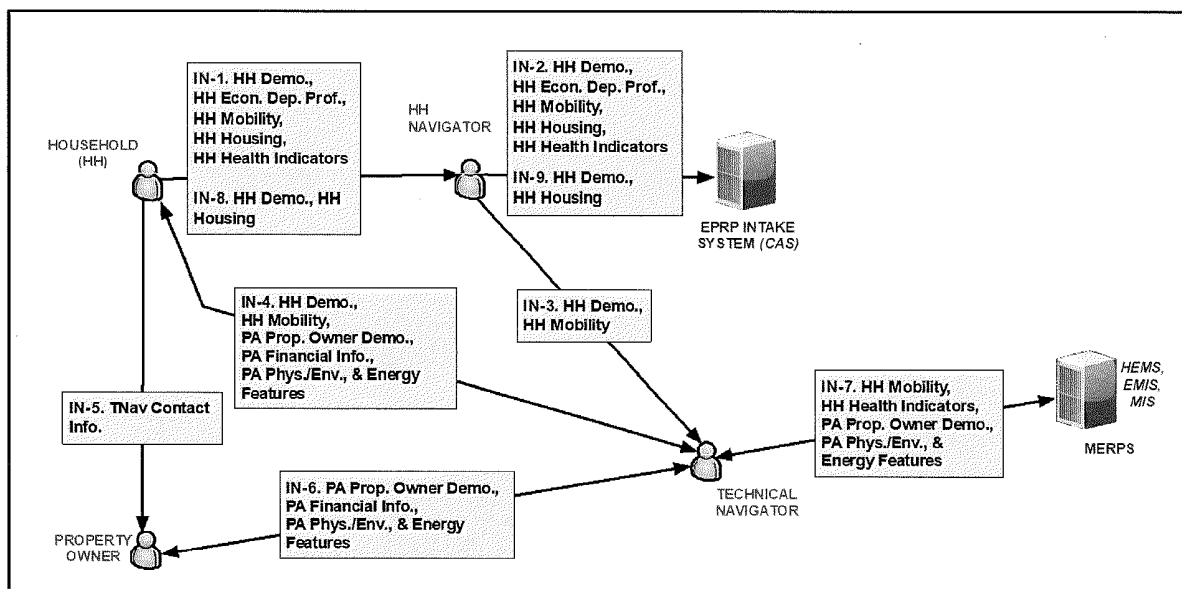


Figure 1 - Data flow for Intake process

The following table describes the expected data flow and indicates the authority under which it may take place:

Personal Information Authorities Summary - INTAKE			
#	Description/Purpose	Type	Authority
IN-1	Household (HH) learns of EPRP and provides necessary information to HH Navigator (HHNav) to register in the program. HH also provides consent for EPRP to use and disclose their personal information under the terms of the program.	Collection	483(1)(c)
IN-2	HHNav enters information collected from HH into EPRP Intake System.	Use	485(1)(a)
IN-3	HHNav informs Technical Navigator (TNav) of newly registered HH, shares HH demographic information and HH's mobility data.	Use	485(1)(a)

Personal Information Authorities Summary - INTAKE			
#	Description/Purpose	Type	Authority
IN-4	The TNav contacts the HH to begin the registration process, and: <ul style="list-style-type: none"> - confirms all information received from the HHNav; - identifies the owner of the property; and, - if HH owns property, collects any additional demographic information, along with property-related financial data and property features. 	Collection	483(1)(c)
IN-5	If the HH is not the owner of the property, then the HH informs the Property Owner (PO) of their desire to register in the EPRP. The HH provides the PO with contact information for the TNav and requests they make contact to continue the registration process.	Use	485(1)(a)
IN-6	If the HH is not the owner of the property, then the PO contacts the TNav to continue the registration process. TNav collects PO demographic information, property-related financial data and property features. PO also provides consent for EPRP to use and disclose their personal information under the terms of the program.	Collection	483(1)(c)
IN-7	TNav enters information collected from HH and PO into EPRP's Housing Energy Management System (HEMS).	Use	485(1)(a)
IN-8	If the HHNav learns that HH has moved and is no longer residing at their property, they will update their records in the CAS with updated demographics and housing information. If the HH moves to a property that is/will be in the EPRP, then the Intake process will restart.	Collection	483(1)(c)
IN-9	HHNav updates EPRP Intake System to update HH information. Note: HH will not be removed from the CAS so that program data that was collected during their residency is not lost.	Use	485(1)(a)

II. Service Delivery and Operations

During the Service Delivery and Operations process, the Technical Navigator (TNav) and the Energy Management Services Provider (EMSP) will work with the Household and/or Property Owner to determine the best energy solution for reducing their energy consumption. The process starts with conducting an energy audit of the property, identifying a solution, and then lining up the financing for the solution. During this process the Household/Property Owner will sign a contract for the energy solution with the Energy Services Provider (ESP), via the TNav.

The following depicts the flow of information through the Service Delivery and Operations process:

Personal Information Authorities Summary – SERVICE DELIVERY & OPERATIONS

#	Description/Purpose	Type	Authority
SD-1	Household (HH) works with Energy Management Service Provider (EMSP) staff to conduct an audit of the property.	Collection	483(1)(c)
SD-2	If the HH does not own the property, then the Property Owner (PO) works with the EMSP staff to conduct an audit of the property.	Collection	483(1)(c)
SD-3	EMSP staff sends results of the energy audit to the Energy Service Provider (ESP) along with considerations for an energy solution for the property.	Disclosure	485(2)(b)
SD-4	The HH sends results of the energy audit to the TNav.	Collection	483(1)(c)
SD-5	If the HH is not the property owner, then the PO sends results of the energy audit to the TNav.	Collection	483(1)(c)
SD-6	The TNav reviews the results of the energy audit and contacts the ESP to start discussion possible energy solutions.	Use	485(1)(b), 485(1)(c)
SD-7	Official results of the property energy audit are sent from the ESP's system to the EPRP's Energy Management Information System (EMIS).	Disclosure, Collection	485(2)(b), 485(2)(g), 483(1)(c)
SD-8	Working with the EMSP and the HH/PO, the TNav ratifies an applicable energy solution and enters technical and financial details of the solution into the EPRP EMIS.	Use	485(1)(b), 485(1)(c)
SD-9	Results of the energy audit and information pertaining to the selected energy solution is transferred from the EMIS to the EPRP Municipal Capitalization System (MCS) for eventual review by potential investors.	Disclosure	485(2)(b), 485(2)(g)
SD-10	Investment Coordinator (IC) collects information pertaining to the selected energy solution from the MCS for eventual review by potential investors.	Use	485(1)(b), 485(1)(c)
SD-11	Investment Coordinator (IC) shares information pertaining to the selected energy solution with the EPRP Financial Investment Vehicle (FIV) system, making it available for review by potential investors.	Disclosure	485(2)(b), 485(2)(g)
SD-12	Investors access the FIV to provide demographic information and to review details related to this new investment opportunity.	Collection	483(1)(c)
SD-13	Specialized Funders are contacted by the IC who informs them of this new investment opportunity.	Disclosure	485(2)(b), 485(2)(g)
SD-14	TNav brokers a contract for the energy solution between Investors/Specialized Funders, the HH and the ESP.	Collection, Use	483(1)(c), 485(1)(b), 485(1)(c)

Personal Information Authorities Summary – SERVICE DELIVERY & OPERATIONS

#	Description/Purpose	Type	Authority
SD-15	If the HH is not the property owner, then the TNav brokers a contract for the energy solution between Investors/Specialized Funders, the PO and the ESP.	Collection, Use	483(1)(c), 485(1)(b), 485(1)(c)
SD-16	Final details of the Energy Solution and Contract are confirmed with, and signed by, the ESP.	Collection, Use	483(1)(c), 485(1)(b), 485(1)(c)
SD-17	Final details of the Energy Solution and Contract are stored on the EMIS.	Use	485(1)(b), 485(1)(c)
SD-18	As part of the installation of the energy solution, the HH submits information to acquire the required permits to Town of Bridgewater Planning (if applicable).	Collection	483(1)(c)
SD-19	If the HH is not the property owner, then as part of the installation of the energy solution, the PO submits information to acquire the required permits to Town of Bridgewater Planning (if applicable).	Collection	483(1)(c)
SD-20	Town of Bridgewater Planning registers the Property Feature information with their Permitting system and registers the permit for installation (if applicable).	Use	485(1)(b), 485(1)(c)

III. Monitoring and Analytics

The Monitoring and Analytics process covers the period after an energy solution is installed and is running on a property. It is envisioned that this process will provide the Household/Property Owner, the ESP and Investors with information on how well the energy solution is working, and the savings (both energy and financial) being realized.

The following depicts the flow of information through the Monitoring and Analytics process:

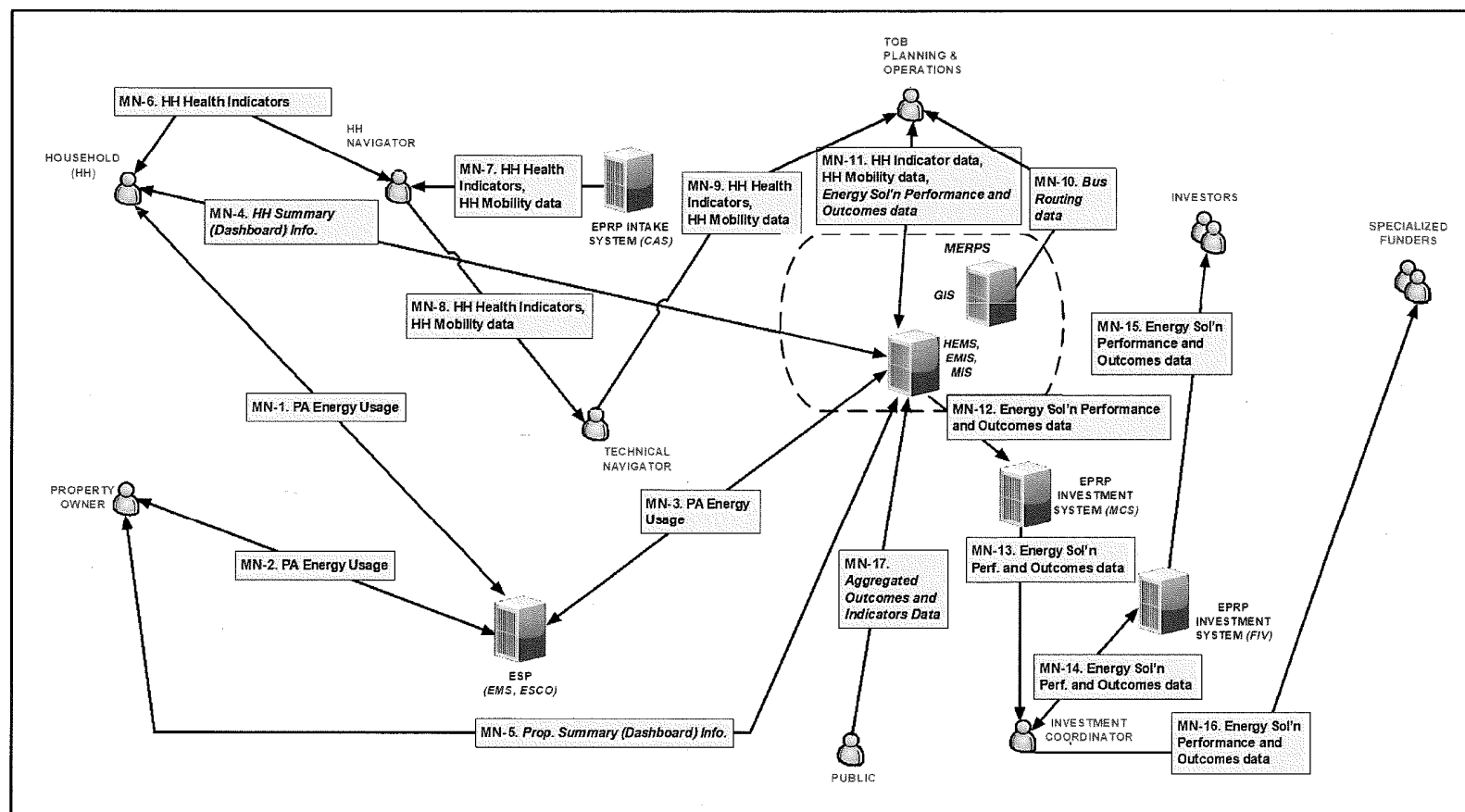


Figure 3 - Data Flow for Monitoring and Analytics process

The following table describes this data flow and indicates the authority under which it may take place:

Personal Information Authorities Summary			
#	Description/Purpose	Type	Authority
MN-1	Real-time energy usage information is sent from the property to the ESP's data collection system. (The HH will have access to a device that can show this information.)	Collection	483(1)(c)
MN-2	If the HH does not own the property, then real-time energy usage information is sent from the property to the ESP's data collection system. Note: Unlike the scenario in MN-1, the PO will <u>not</u> have access to a device that can show them real-time energy usage information. This is done to maintain the privacy of the HH, as the PO would not normally have had access to this information.	Collection	483(1)(c)
MN-3	Property energy usage data is sent from the ESP's data collection system to the EMIS.	Disclosure	485(2)(c), 485(2)(g)
MN-4	The HH will have access to a portal into the HEMS to collect summary (dashboard) information on energy consumption and savings to date.	Collection	483(1)(c)
MN-5	The PO will have access to a portal into HEMS to collect summary (dashboard) information on the property's energy consumption and savings to date.	Collection	483(1)(c)
MN-6	HH will self-report HH Health Indicator data to the HHNav.	Collection	483(1)(c)
MN-7	HHNav will update and extract health and mobility indicator data for HH from the EPRP Intake System.	Use	485(1)(b), 485(1)(c)
MN-8	HHNav shares health and mobility indicators data for HH with the TNav.	Use	485(1)(b), 485(1)(c)
MN-9	TNav shares health and mobility indicators data for HH with ToB Planning.	Use	485(1)(b), 485(1)(c)
MN-10	ToB Planning reviews the HH mobility indicator data, and cross-references GIS information for bus routing to consider possible route changes.	Use	485(1)(b), 485(1)(c)
MN-11	ToB Planning stores de-identified HH health and mobility indicators data in the HEMS and MIS (respectively) and also assembles energy solution performance and outcomes data from HEMS and EMIS.	Use	485(1)(b), 485(1)(c)
MN-12	HEMS shares <u>aggregated</u> energy solution performance and outcomes data on the MCS, for eventual review by investors.	Use	N/A (no Personal Information)
MN-13	MCS shares <u>aggregated</u> energy solution performance and outcomes data with the IC.	Use	N/A (no Personal Information)

Personal Information Authorities Summary			
#	Description/Purpose	Type	Authority
MN-14	IC shares energy solution performance and outcomes data with the FIV.	Use	485(1)(b), 485(1)(c)
MN-15	Investors access FIV to collect energy solution performance and outcomes data on their investments.	Use	485(1)(b), 485(1)(c)
MN-16	Specialized Funders are contacted by the IC who provides them with energy solution performance and outcomes data from their investments.	Use	485(1)(b), 485(1)(c)
MN-17	Public can access a portal into the HEMS to download summarized aggregated energy solution outcomes and indicators data.	Use	N/A (no Personal Information)

C. Collection, Use and Disclosure of Personal Information

Limiting Collection, Use and Disclosure

As described in **Section B.** of this document, the Energy Poverty Reduction Program is the next step in the Town of Bridgewater's strategy for addressing the very real issue of energy poverty within its community.

The design of the EPRP was preceded by research undertaken by the Town to answer the following questions:

- What members of our community currently experience energy poverty?
- How does energy poverty impact the lives of our residents?
- What solutions will fundamentally address the root causes of energy poverty and improve the quality of life of our residents?
- How can those solutions be delivered through existing or new service organizations, programs, and collaboration platforms?

To answer these questions, the Town engaged residents via focus groups, in-depth interviews, online and in-person surveys, and census surveys. It also conducted interviews and workshops with community stakeholders.

Results from the surveys and engagement with residents and Community Service Organizations indicated that **2 out of 5 Bridgewater residents (40% of the town's population) suffer from some form energy poverty.** A detailed breakdown of this survey result, looking at the indicators of energy poverty, is provided in Figure 4.

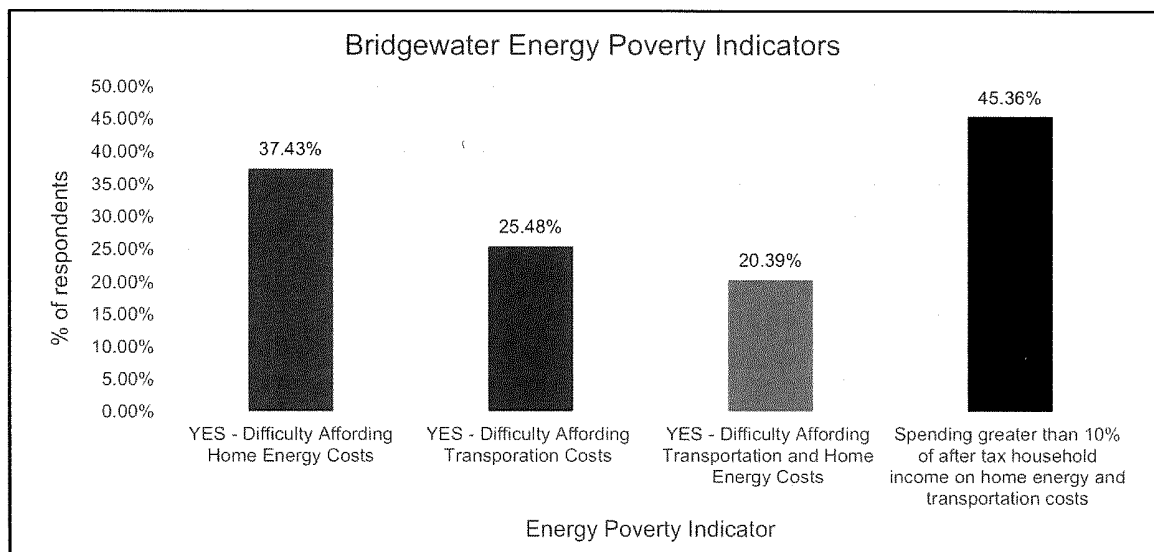


Figure 4 – Bridgewater Energy Poverty Indicators – Survey Results

As stated in its submission for funding to the Smart Cities Challenge, the goal of the Energy Poverty Reduction Program is to, “Reduce energy poverty risk at the household, neighbourhood, and community levels by enhancing energy management capability at these levels through the local provision of comprehensive energy management support services.” It will do this by identifying households-at-risk and properties-at-risk and helping them to implement industry accepted energy solutions/interventions. Investors will support households-at-risk by providing funding for the solutions in exchange for financial or social (e.g. goodwill) returns on their investments.

For those experiencing energy poverty, access to the technology and data to manage their energy needs is often very limited. For the most vulnerable, interfacing with a human rather than a dashboard is the most practical way to assist with assessing their needs and solving the immediate problems caused by energy poverty. Not having or being at risk of losing their shelter, these residents will need access to a range of community, health, employment, and other services, not just services that relate to housing and transportation. For this reason, we propose to combine our energy management support services with a Coordinated Access System.

To accomplish this energy solution matchmaking, and to monitor its effectiveness within the community, the EPR Program will collect information from the various stakeholders involved. A framework for this collection of information can be found in the 22 outcomes and indicators (see Appendix A) included in the design of the EPR Program. By definition, some of these indicators must necessarily collect, use, disclose and retain personal or personal health information in order to:

- A. qualify a resident’s current energy poverty situation (i.e. establish a baseline);
- B. determine what is needed to help a resident escape energy poverty (i.e. identify interventions);
- C. facilitate others providing financial and other supports (i.e. acquire solution funding and investments for interventions);
- D. apply an energy solution (intervention) to provide support for residents (i.e. apply an intervention);
- E. monitor the success of the intervention by collecting key data items (i.e. track trends against the baseline); and,

- F. generate aggregate reports for investors and the public on the effectiveness of the energy solutions being deployed (and in the case of investors, the expected or projected financial and social returns on their investment).

While the details of just what information is to be collected by the program have not been finalized at the time of writing of this PPIA, the selection of indicators and expected data elements will be based upon the following principles:

1. Always collect the minimal amount of information needed for a given task or operation;
2. Consent for use and disclosure of personal and personal health information will always be required from households, and the notification they receive during collection will clearly outline what information will be collected, why, how it will be used, and who else will have access to it;
3. Access to program information will always be on a need-to-know basis;
4. As much as possible, and where it won't prevent continued participation in the program, households and/or property owners will be given the option of opting out of providing personal and/or personal health information. For instance, households may not be able to opt out of providing energy usage information to the program, but they should be able to opt-out of self-reporting on household health indicators to the program; and,
5. Whenever possible, personal information will be de-identified or made available in aggregate form.

Research continues into the problem of energy poverty and working to find solutions. Although band-aid solutions to counteract high energy costs do exist, such as Nova Scotia Power Inc.'s *Rate Stability Plan*, Salvation Army's *Good Neighbour Energy Program* and the Society of Saint Vincent de Paul's *bill assistance program*, a systematic approach is lacking to combat energy poverty. Studies undertaken by organizations such as the All One Sky Foundation conclude that main drivers of Energy Poverty include: (1) energy prices, (2) dwelling energy efficiencies, and (3) household income. Through the Town's extensive stakeholder engagement activities, the EPR program was designed to tackle the aforementioned factors through three innovative mechanisms:

1. **Connected technologies:** forming the backbone of the service concept, connected technologies provide a technological *engine* that drives energy savings to create financial returns for the households and property owners, and streamlines client intake and access to community services.
2. **Coordinated access:** a social support *engine* that keeps clients connected to the program and coordinates access to the various additional community supports that households-at-risk may need.
3. **Financial investment:** building on Bridgewater's experience developing a fully-costed approach to energy transition, self-financing energy improvements provide a financial *engine* that supports extensive investment in energy efficiency solutions.

To track the program's success and take corrective actions to amend any underachieving activities, the Town has developed a set of indicators that are linked to energy poverty curbing outcomes. These indicators have been defined with the assistance of service organizations, such as the Nova Scotia Health Authority, whose clients are affected by living in energy poverty and who have studied the causes and affects of Energy Poverty.

Regarding the EPRP's collection and use of personal health information, there has been much credible work done in the area of researching whether investing in energy efficiencies will support health improvements. Working with the Nova Scotia Health Authority, the Town has reviewed research into the effects of energy interventions on the health of residents (for a list of selected sources, see Appendix B). Many of these

sources provide evidence using accepted academic research methods to formally identify and demonstrate the positive results of the energy interventions to be supported by the EPR program.

Further, data collected by this project will contribute to efforts to understand how communities in Nova Scotia, Canada, and internationally can support health equity through reducing energy poverty.

The following methods will be used by the Town to promote a less-privacy-invasive manner for collecting, using and disclosing personal and personal health information for the EPR program:

- The Town will maintain total transparency with participants regarding what information will be collected, why, how it will be used, who will have access to it, for how long it will be retained, and how a participant may get access to and amend information that has been collected about them.
- Each of the 22 indicators and outcomes (Appendix A) will be reviewed to finalize what information is required in order to support them;
- An EPRP Data Advisory Working Group comprised of members from the Town, its partners, and other subject matter experts will be established to help select indicators/outcomes, and the data elements needed to support them;
 - The working group will conduct a detailed review of what data is to be collected and how to collect it, and will consider the sensitive nature of some aspects of the program (e.g. collection of sensitive financial information from a household, and also asking them to self-report on certain health indicators);
 - For items that have been identified as being personal or personal health information, the working group will consider whether that information is truly necessary, whether it is ethical to collect it (e.g. mental health-related information), and/or whether its collection could be optional (e.g. allowing the household or property owner to opt out and still be a participant in the program);
 - The working group will be sensitive to the fact that by collecting data, the EPR Program could be generating a more longitudinal view of an individual; and,
 - The working group will watch for, and prevent, the possibility of collecting and releasing data that could inadvertently identify an individual due to small cell size reporting.
- Whenever possible, data will be collected directly from the source, through a previously established and consented process.
 - Health indicators information will be collected from households as self-reported items, and not from health records or electronic health record systems.
- All EPRP participants will have full access to data collected from/about them by the program, for review and correction, as stipulated by the Municipal Government Act.
- Due to the nature of this program it may not be plausible to retain some data elements for a short time period (e.g. historical energy usage data related to a particular solution, address or area). The program will need to establish a formal retention policy for all data that it collects, based upon Provincial and Federal legislation (e.g. the MGA and the Privacy Act).

Compliance with Personal Information International Disclosure Protection Act ("PIIDPA")

At the time of writing of this PPIA, no decisions had been made on the IT solutions to be implemented in support of the EPRP. However, the Town will require that all information in the custody or control of the EPRP will be stored on IT systems physically located within Canada. As well, access to EPRP information will be limited to stakeholders who are physically located within Canada.

Therefore, the EPRP will be in full compliance with the PIIDPA.

D. Correction, Accuracy and Retention of Personal Information

Correction and Accuracy

All personal information collected and managed by the Town will be collected directly from an individual and/or any others who may have been involved in supporting or participating in the EPRP.

Any personal information collected by a service provider of the Town will be collected directly from an individual (e.g. household member), a Town of Bridgewater staff member, or from another service provider of the Town (and provided on the Town's behalf).

Collecting information directly from these sources makes it as accurate as possible.

If information is received from a service provider, Town of Bridgewater staff have been instructed to ensure that only the minimum of personal information required by the EPRP is collected, and any controls within the EPRP Intake System, the EPRP ERP System, or the EPRP MCS or FIV systems that would enhance the accuracy of personal information being entered (e.g. pull-down lists, minimal open text entry) are implemented.

Section 465 of the Municipal Government Act (Part XX - Freedom of Information and Protection of Privacy) establishes an individual's right to access their personal information contained within the Energy Poverty Reduction Program. Section 466 of the act provides the procedure that individuals can use to obtain access to their personal information. Section 467 and onward of the act outlines the responsibilities of the Town when receiving with any such requests.

If the Town receives a request to make corrections to personal information related to an individual (per Section 484 of the MGA), and the Town does not/cannot comply with the request (for physical, procedural or other reasons) then a note explaining the request and reason for not complying will be entered into the system considered to be the source of authority for that record within the EPRP (e.g. CAS, HEMS). If the Town complies with a request to make corrections to personal information contained with the EPRP, it will ensure that this change is made in any other related EPRP systems (if applicable), and EPRP stakeholders who do not use these systems will also be notified of the change (if applicable).

Retention

Personal information will be collected and used by the EPRP to:

- **decide** whether a household/property qualifies for the EPRP;
- register a household/property in the program;
- **decide** upon the best energy solution for them;
- **decide** upon financing for the selected energy solution;
- establish household financial, transportation, energy use and health benchmarks;
- establish property financial and energy use benchmarks;
- monitor household/property energy usage; and,

- monitor changes in household self-reported health indicators.

It should be noted that in each of these instances:

- the collection and use of personal information will be done with the full consent of the household or property owner;
- only the minimum of information that is required for the operations of the EPRP will be collected – no more, no less;
- whenever possible, personal identifiers will be anonymized or de-identified, and data will be aggregated; and,
- data will only be retained as necessary for the ongoing functions of the EPRP, or to comply with legislative, regulatory or policy requirements.

Regarding the retention of personal information collected by the EPRP, the Town of Bridgewater has a *Records Management, Retention, & Destruction of Documents Policy* that aligns with s. 34 of the MGA and follows the standards and procedures of the Association of Municipal Administrator's Records Management Program¹.

This policy stipulates retention periods for information based upon record type, including requiring records of "...past decisions of the Town of Bridgewater..." be retained indefinitely. However, the policy focuses on information relating to the activities of a town council, and not of a program or service being offered to the public by a town council. Thus, there appears to be no record type defined that corresponds to information that would be related to the EPRP. **This has been identified as a risk in Section G**, as the policy is not clear on the retention period (e.g. of at least one year) for information used by the EPRP to make decisions.

E. Security of Personal Information

Reasonable Security

Administrative Safeguards

The following administrative safeguards have been implemented by the Town to help maintain the privacy and confidentiality of personal information that they collect, use and retain, and would also be applied to the management of information for the EPR Program:

Privacy-enhancing policies and protocols

- *Confidentiality Policy* – covers activities associated with the usual duties of a town council, but may not adequately cover the need for confidentiality of information related to the activities of the EPRP program.
- *Request for Tender Template* – Contains a confidentiality notice that requires the proponent not disclose or cause disclosure of information without the written approval of ToB. It also requires they be in compliance with PIIDPA.
- *Personnel Policy & Procedures Manual* – contains a section on Confidentiality requirements which is identical to the Confidentiality Policy and hence would have the same shortcomings.
- *Code of Conduct* – Includes a Disclosure of Confidential Information clause requiring all employees of the ToB to keep all information confidential and to abide by the provisions of the FOIPOP act.

¹ Available online at <https://www.bridgewater.ca/town-council/town-by-laws-and-policies/policies/1023-policy-80-records-management-retention-destruction-of-documents/file>.

- The Town's privacy breach and incident response protocols are reviewed and revised to reflect best practices or recommendations, and to implement lessons learned from post-incident reviews.

Training

- All Town employees receive general privacy protection training as part of their onboarding. Town employees who directly manage personal information receive additional training specifically tailored to their roles.
- The Town reviews all training and education programs periodically and modifies them as needed to reflect best industry practices.

Contracts

- The Town currently includes terms within its contracts with service providers requiring them to maintain the privacy and confidentiality of any personal information they may access.
- Contracts with all EPRP participants, partners and service providers will build upon the current contract templates to add specifics related to the EPRP, and will include a Privacy Protection Schedule to ensure that the privacy and confidentiality of all information is maintained by all non-Town of Bridgewater program members. (A sample Privacy Protection Schedule has been included in Appendix C.)

Data Governance

Data Governance is a vital component of any program that collects and uses data in the provision of services to individuals. Key considerations for a data governance model would be: (i) who owns and is responsible for the data that is collected, (ii) who will control access to and uses of the data, (iii) how will the data be kept private and secure, (iv) any standards related to the data, and (v) ensuring compliance with Provincial and Federal privacy and security laws.

For the EPRP, the concept of data governance must start with understanding the exact data to be collected, from what sources, and the rationale behind its collection. To aid with this, the program will establish an EPRP Data Advisory Group. This group will comprise staff from the Town and its partners, and other energy poverty subject matter experts from the business and academic realms. Members of this group will bring their experience and expertise to bear on the task of identifying the minimal data set for the EPRP, identifying items that individuals can opt-out of providing without compromising the integrity of the program, and considering the ethics of the data being captured. The due diligence offered by this group will become the foundation for policy development later on, and will provide vital information for both the detailed program design and also the completion of the comprehensive PIA for the program.

Next, the EPRP must develop the structure for supporting the key considerations of data governance for the program. This will be addressed by establishing a separate EPRP Data Governance Group. This group, whose membership may or may not include members from the Data Advisory Group, will be responsible for overseeing collection, use, and access to the data collected by the program. Key initial activities for this group will include establishing policies, procedures and standards for EPRP data collection and use. This will include identifying and drafting/approving documents such as (but not limited to) a Privacy Protection Schedule (for inclusion in contracts), Information/Data Sharing Agreements, and Master Service Agreements to be signed with partners and service providers.

Once the program has been implemented, the Data Governance Group will continue to play a role in addressing any issues relating to governance of the data which forms the core of the EPRP. To aid in this ongoing role, a data governance framework, or series of guiding principles, should be established for the EPRP and include concepts such as (but not limited to):

I. Privacy and protection

- Privacy is a fundamental right.
- Transparency of collection, use, retention and disclosure of personal data.
- Minimisation of collection, use, disclosure and retention of data to that necessary for the operations of the program.
- Use of meaningful, informed consent and opt-out provisions for data collection.
- Adopting policies and measures that exceed legislative requirements relating to privacy and security of data.
- Recognizing individuals' rights to access, review, amend and remove their data, and that they may opt out of providing certain data elements at any time.
- Ethical use of technology and data.
- Awareness and assessment of the possibility surveillance of individuals.
- Use of de-identification and data aggregation to ensure privacy.

II. Responsible Use of Data

- Individual and public interests are paramount when considering all uses of data.
- Principles of use are open, transparent and implemented in a manner to foster community trust.

III. Data stewardship, sovereignty and protection

- Establish clear accountability structures to promote safe uses of data, including open data protocols.
- Sensitivity to the use of aggregated data, and transparency of analysis algorithms (to avoid possible bias or marginalization of groups of individuals).
- Authorized data use and adherence to intellectual property practices.

IV. Secure data and services environment

- All collected data is virtually and physically secured.
- All technology infrastructure and solutions are resilient.

V. Extensible, agile policies and standards

- Policies, procedures and standards can adapt quickly to changes in legislation and unforeseen circumstances that may impact the safety or security of participants, partners or service providers.

VI. Enable innovation

- Support global standards for digital data architectures by designing services and supporting technologies to be open by default.
- Develop policies, protocols, standards and agreements to avoid the possibility of fostering monopolies or creating real/perceived barriers to entry.

Regarding data ownership, the Town will assert its control and ownership of all data collected by or for the EPRP, regardless of who has custody of it, through schedules within the contacts and agreements that it signs with all partners and service providers of the EPRP.

Privacy Framework

During the completion of this PPIA, the Town of Bridgewater performed a gap analysis of their current Privacy Framework against the *Privacy Management Program – Gap Analysis* worksheet² provided by the Office of the Information and Privacy Commissioner for Nova Scotia (OIPC). The results of this gap analysis and its relation to the EPRP are included in this section.

The Town is committed to making changes to strengthen its existing Privacy Management Framework to support the implementation the EPRP, as guided by the following analysis.

² Available at <https://oipc.novascotia.ca/sites/default/files/publications/PMP%20Gap%20Analysis%20for%20PB%20-%20FOIPOP%20and%20MGA%20-%202015Oct28%20.pdf>

A summary of the average scores from this analysis is included below, along with the changes the Town will consider making (where practicable) to align oversight of the EPRP with the OIPC's standard.

Gap Analysis Ratings & Colour Ratings for Summary Chart

Rating	Colour Code	Rating Description
1.0 – 1.9	Red	Little to no evidence of compliance - documented or in practice.
2.0 – 2.5	Yellow	No documented evidence of compliance but some evidence of effective practice in compliance or documented practice requirement with only limited evidence of implementation.
2.6 – 3.0	Green	Documented and substantial practical compliance.

Gap Analysis Summary		
PMP Requirement	Average Rating	Required Changes
Building Blocks – Organizational Commitment		
a. Buy-in from the Top	1.4	<ul style="list-style-type: none">While some training has been done with Senior Management to make them aware of the privacy issues related to this program, it is not complete nor as organized as it could be. To address this, further organization will be applied to this training, and formal monitoring processes will be implemented.Monitoring of compliance with privacy-related policies and legislation will be delegated as appropriate (e.g. hiring third parties to conduct Privacy Impact Assessments for all new or updated initiatives that involve Personal Information).Bolster staff education and awareness of privacy and the proper handling of personal information, both at the time of hiring and on an annual basis.Regularly review all privacy policies to ensure that proper breach, monitoring and reporting functions are in place and that the right people know how the Privacy Management framework is structured and whether it is functioning properly.
b. Privacy Officer	3	
c. Privacy Office	2.2	
d. Reporting	1.1	
Building Blocks – Program Controls		
a. Personal Information Inventory	1.0	<ul style="list-style-type: none">Create a framework for ongoing tracking of all personal information that is collected and retained by the Town (i.e. Personal Information Inventory).
b. Policies	1.5	

Gap Analysis Summary		
PMP Requirement	Average Rating	Required Changes
c. Risk Assessment Tools	2	<ul style="list-style-type: none"> Establish a formal process for conducting an annual inventory of all personal information retained by the Town for its programs and services. Privacy Officer will develop an overall Privacy Policy for the Town; Privacy Officer will develop a Privacy Breach Policy and Privacy Breach Protocol for the Town; Develop or update accordingly policies and procedures for: <ul style="list-style-type: none"> How the Town will collect, use, and disclose personal information related to the programs and services it provides, and the requirement for getting consent and notifying individuals of the use of their personal information; How to process a request for accessing and correcting personal information; The responsible use of personal information and technology; The required administrative, technical and physical controls to be put in place to ensure privacy and confidentiality of all personal information; and, How to address complaints that are challenging the Town's compliance with its privacy policies and procedures. Require the completion of a PIA for all projects that involve personal information and updating of the PIA as the project evolves over time. Involve the privacy office during the design stage of new services or programs to consider privacy at the onset. Require privacy training for all new employees, and monitor the completion of this and other privacy related training on an ongoing basis, for all employees. Privacy training should be updated to reflect changes in best practices and legislation, and will have versions tailored to staff who work directly with personal information. Agreements signed with Service Providers will be modified to require them to comply with Town of Bridgewater privacy policies and procedures, to require that they receive privacy training if they are dealing with personal information, and that they will undergo and cooperate with privacy-related audits of their services. Create external communications processes for notifying individuals if their personal information will be transferred outside of Canada; and, Bolster existing communications materials informing individuals of how to submit a complaint regarding the Town's compliance with their privacy policies and procedures.
d. Training and Education Requirements	1.0	
e. Breach and Incident Management Protocols	2.3	
f. Service Provider Management	2	
g. External Communication	2.4	

Gap Analysis Summary		
PMP Requirement	Average Rating	Required Changes
Ongoing Assessment and Revision – Oversight and Review Plan		
a. Develop Oversight and Review Plan		<ul style="list-style-type: none"> The Privacy Officer will develop a plan for reviewing the Town's overall Privacy Management framework, including formal measures and a schedule for when each policy or control is reviewed.
Ongoing Assessment and Revision – Program Controls		
a. General Requirements	1	<ul style="list-style-type: none"> The Privacy Officer will periodically review all privacy-related controls (including, but not limited to, privacy-related policies and procedures, training, and service agreement templates) in use at the Town, to ensure that they are complete, effective, based upon current best practices, addressing issues identified by audits, supported by training, supported by formal policies and procedures, and requiring documentation of all issues that are encountered and addressed. Programs controls are continuously monitored and updated as required, under the oversight of the Privacy Officer. The Personal Information inventory is kept up to date. Contracts with service providers are reviewed and modified as necessary to align them with the Town's privacy policies and procedures.
b. Update Personal Information Inventory	1.5	
c. Revise Policies	1.5	
d. Treat Risk Assessment Tools as Evergreen	1.5	
e. Modify Training and Education	2	
f. Adapt Breach and Incident Response Protocols	2	
g. Fine-tune Service Provider Management	2	
h. Improve External Communication	2	

Gap Analysis Ratings & Colour Ratings for Summary Chart

Rating	Colour Code	Rating Description
1.0 – 1.9	Red	Little to no evidence of compliance - documented or in practice.
2.0 – 2.5	Yellow	No documented evidence of compliance but some evidence of effective practice in compliance or documented practice requirement with only limited evidence of implementation.
2.6 – 3.0	Green	Documented and substantial practical compliance.

Technical Safeguards

The following technical safeguards have been implemented by the Town to help maintain the privacy and confidentiality of personal information that they collect, use and retain, and would also be applied to the management of information for the EPR Program:

- All users of Town systems are authenticated by Microsoft Active Directory using a unique username and password.
 - Passwords are minimum 8 characters, and require three of the following four elements:
 - UPPERCASE LETTERS
 - Lower case letters
 - The numbers 0-9
 - Special characters or punctuation marks
 - Passwords aging has been activated (expiry every 180 days), the last 24 passwords are unavailable for reuse, and passwords are synchronized to Microsoft Azure Active Directory to facilitate Office 365 single sign-on.
 - The Town is investigating implementing two-factor authentication during the 2019-20 fiscal year.
- All end user devices are encrypted using Microsoft Bitlocker, and a copy of the encryption keys is secured in the Town's IT Office.
- All Town servers are located in a co-located data center (provided by Eastlink) that uses two-factor secure entry (swipe card and PIN) at three points prior to access. The facility also has full video surveillance.
 - Servers have been provisioned in virtual (vmWare) environment and are not currently using encryption due to the robust physical security provided by the Eastlink data center.
- A single (redundant) firewall provisioned and supported by Eastlink serves all Town partners. Eastlink provides managed security services, including incident response, intrusion detection and prevention, and anti-malware services. Town staff monitor the firewall's performance and other metrics.
- Where required, some sites (e.g. water treatment plant, Desbrisay Museum, Public Works) connect to the Town's production network via a secure Juniper VPN connection.
- The Town has a formal Disaster Recovery plans documented and ready for activation when needed.
- The Town has a policy that requires a Threat and Risk Assessment (TRA) be completed for all systems containing personal and/or confidential information. Any IT systems that are newly implemented or adopted by the EPRP would be required to conduct a TRA or show evidence of the recent successful completion of one.

Physical Safeguards

The following physical safeguards have been implemented by the Town to help maintain the privacy and confidentiality of personal information within their office and building, and would also be applied to the management of information for the EPR Program:

- Access to areas within the Town office where personal and/or confidential information is kept (e.g. the area where the Mayor's and CAO's offices are located) is controlled using access key cards or RFID fobs. These cards/fobs are programmed based on an employee's job and their need to access these locations.
- Town staff generally use laptops, so they would be taking them home with them at night. However, some laptops installed permanently in common areas (e.g. in the Town Council Chamber) are secured using locking cables.

- Sensitive files (e.g. HR files) are stored in a locked cabinet inside a locked office that only certain staff can access.
- Fire proof vaults are used to protect minute books, financial information, all permanent records, and other important papers that cannot be destroyed. The combinations of these vaults are only known by certain staff members.
- Files in storage are accessed via a key-coded door and then key access to the storage room.

It should be noted that the Town does not expect to be hosting any of the IT systems in support of the EPRP. It is envisioned that these systems will be hosted by partners or third-party providers.

Auditing

With respect to the audit processes in use by the Town currently:

- The Town's IT Shared Services group manages access to shared folders and data maintained in the Microsoft Cloud, and they use a formal process to ensure access to all files is limited to those specifically authorized to have it.
- All shared folder access has been reviewed and corrected in the last 6 months (at the time of writing of this PPIA).
- Access to Cloud based data is regularly monitored by Town IT staff.
- The Town has a policy that requires a Threat and Risk Assessment (TRA) be completed for all systems containing personal and/or confidential information. Any IT systems that are newly implemented or adopted by the EPRP would be required to conduct a TRA or show evidence of the recent successful completion of one.

Access Matrix

The EPRP agrees that access to personal information must be limited only to those whose job responsibilities require that they have access to it. The following user access matrix documents EPRP stakeholders' access to what program information.

	Household (HH)	Property Owner	HH Nav.	Tech. Nav.	EMSP Staff	TOB Plan. & Ops.	Investors	Specialized Funders	Inv. Coord.	Public
HH Demographics	✓		✓	✓	✓	✓				
HH Economic Dependency Profile	✓		✓							
HH Income	✓		✓							
HH Detailed Expenditures	✓		✓							
HH Housing	✓		✓							
HH Transportation Mode	✓		✓	✓		✓				
HH Commuting Profile	✓		✓	✓		✓				
HH Financial Information	✓		✓							

	Household (HH)	Property Owner	HH Nav.	Tech. Nav.	EMSP Staff	TOB Plan. & Ops.	Investors	Specialized Funders	Inv. Coord.	Public
HH Health Indicators	✓		✓	✓		✓				
PA Property Owner Demographics	✓	✓		✓		✓				
PA Physical/Environ. Features	✓	✓		✓		✓	✓	✓	✓	
PA Energy Features	✓	✓		✓		✓	✓	✓	✓	
PA Appliances	✓	✓		✓		✓	✓	✓	✓	
PA Energy Usage ³	✓	✓				✓	✓	✓	✓	
PA Energy Audit	✓	✓		✓	✓		✓	✓	✓	
PA Financial Information	✓	✓		✓			✓	✓	✓	
PA Property Indicators	✓	✓				✓	✓	✓	✓	
EP Community Energy Solutions	✓	✓		✓	✓	✓	✓	✓	✓	
EP HH Energy Solutions	✓	✓		✓	✓	✓	✓	✓	✓	
IN Investor Demographics									✓	
IN Opportunities				✓			✓	✓	✓	
IN Solution Details	✓	✓		✓			✓	✓	✓	
EPRP Service Providers				✓	✓	✓	✓	✓	✓	
Environmental Data				✓	✓	✓	✓	✓	✓	✓
Aggregated Energy Solution Performance and Outcomes data						✓	✓	✓	✓	
Summarized aggregated energy solution outcomes and indicators data										✓

✓ – Only in situations when the Household also owns their property.

F. Risk Mitigation

The following assesses the impact on privacy, confidentiality and security of personal information from the design of the Energy Poverty Reduction Program. Recommendations for mitigating of privacy risks are also provided.

³ Property Owners will not receive any real-time data on a Household's energy usage, as this is not information that they would normally have nor is there any reason for them to receive it as part of the EPRP. Instead, they will have access to aggregated or summary energy usage data on a property/household.

#	Risk	Mitigation Strategy	Likelihood	Impact
1	A privacy and/or security incident occurs and there is no direction over management of the issue nor how to handle and respond to it.	<ul style="list-style-type: none"> The Town's Privacy Officer should develop an overall <i>Privacy Policy</i>, a <i>Privacy Breach Policy</i> and a corresponding <i>Privacy Breach Protocol</i> for the Town. Review and act upon all recommended changes in Section E included as part of the Privacy Framework gap analysis. The Town should appoint a Chief Security Officer, who would work with the Privacy Officer on remediating any breach situations. 	Medium	High
2	Unauthorized access to personal information retained on servers hosted by the Town and related to the EPR Program.	<p>At the time of writing of this PPIA, it was not decided whether the Town would be responsible for hosting any IT systems in support of the EPRP. However, if they do host any systems that would contain personal information, it is recommended that it:</p> <ul style="list-style-type: none"> Includes these systems in the comprehensive PIA to be completed for the EPR Program; and, Completes/updates a TRA for each IT system being used. 	Medium	High
3	<p>Personal information is retained by the EPRP that does not relate to any HH currently participating in the program.</p> <p>This is possible when:</p> <ul style="list-style-type: none"> A HH enrolls in the program but their Property Owner (e.g. landlord) refuses to participate. In this instance, the HHNav was not contacted 	<ul style="list-style-type: none"> Ensure that no HH personal information is entered into the EPRP Intake System until it is confirmed that the Property Owner agrees to participate. (To be more fully explored during detailed program design.) HHNav should keep in touch with HH while they are in the 	Medium	High

#	Risk	Mitigation Strategy	Likelihood	Impact
	<p>to remove HH information from the EPRP Intake System; or,</p> <ul style="list-style-type: none"> A HH that is participating in the program decides to move to another property that is not in the program. 	<p>program so that they are aware if a HH changes addresses. When this happens, HHNav should update the EPRP Intake System accordingly.</p> <p>Note: This could include anonymizing information related to the departing HH so that it is not lost to the program.</p>		
4	<p>Privacy breach occurs in a third-party IT system (e.g. EMSP) related to the EPRP, and the Town is not notified of it in a timely fashion.</p>	<ul style="list-style-type: none"> Ensure that privacy and security breach notification timelines are included in any contracts and/or agreements signed with third-parties. Include a Privacy Protection Schedule in the contracts signed with third-parties, and ensure that it includes timelines for privacy breach notification. 	Medium	High
5	<p>Data items from the EPRP are shared with Employment and Social Development Canada (the Federal Department), a third-party but not a partner of the EPRP.</p> <ul style="list-style-type: none"> If the Town elects to use HIFIS system as the data platform for the EPRP Intake System, the Town will need to add data elements to the HIFIS database. Use of the HIFIS database requires sharing of data elements with Employment and Social Development Canada (ESDC). 	<ul style="list-style-type: none"> Identify all data elements that will need to be added to the HIFIS database to accommodate the EPRP. Review the data sharing agreement that would be signed with ESDC to understand the obligations for data sharing. Strive to eliminate/reduce the amount of data that will be shared with ESDC. Ensure that the comprehensive PIA for the EPRP documents all details and ramifications of using HIFIS for the EPRP. 	High	Medium
6	<p>A Property Owner (i.e. landlord) receives more information about a tenant (i.e. Household) than</p>	<ul style="list-style-type: none"> Only share de-identified and/or aggregated data with the PO. For instance, this 	Low	High

#	Risk	Mitigation Strategy	Likelihood	Impact
	they normally would, as a result of the Household participating in the EPRP.	would include not providing them with access to real-time energy usage information of the HH.		
7	<p>A request for information by a household in the EPRP cannot be fulfilled because the required records were not retained.</p> <ul style="list-style-type: none"> This is due to the Town of Bridgewater's <i>Records Management, Retention, & Destruction of Documents Policy</i> not aligning with MGA s.483(4). 	<p>The Town of Bridgewater should amend its <i>Records Management, Retention, & Destruction of Documents Policy</i> to:</p> <ul style="list-style-type: none"> specifically identify records related to the EPRP that would have been used to make decisions; and, require that these records be retained for a period of at least one year, in compliance with MGA s.483(4). 	Low	Medium

G. Key Issues / Next Steps

The following provides some next steps coming from the risks identified in the previous section. Due to the nature of this PPIA (i.e. it is assessing a program design being proposed for funding - it has no concrete implementation dates or timelines), the date for completion of some items is reliant upon the future implementation date.

No.	Key Issue / Next Step	Activities to be undertaken	Date to be Complete
1	Key components of a best-practice Privacy Framework are not defined for the Town.	Privacy Officer to develop Privacy Policy and Privacy Breach Policy	October, 2020
2	(See Risk #1)	Privacy Officer to oversee completion of all other privacy framework recommended changes outlined in Section E.	October, 2020
3	The Town has a Privacy Officer, but no Chief Security Officer (CSO) to oversee security-related issues.	Appoint a CSO for the Town of Bridgewater.	October, 2020
4	There is no privacy-focused component of contracts signed by the Town with partners, service providers, or other third-parties.	Privacy Officer to develop a Privacy Protection Schedule for the Town (an example has been included in Appendix C) and a version to be used by the EPRP.	October, 2020

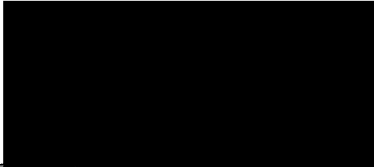
No.	Key Issue / Next Step	Activities to be undertaken	Date to be Complete
5	Town records management policy may not be fully in compliance with the MGA s.483(4).	Amend the Town's <i>Records Management, Retention, & Destruction of Documents Policy</i> to: <ul style="list-style-type: none"> specifically identify records related to the EPRP that would have been used to make decisions; and, require that these records be retained for a period of at least one year. 	October, 2020
6	Identification of the exact data elements to be collected by the EPRP, and the indicators / outcomes driving them, is not complete.	<ul style="list-style-type: none"> Begin to identify members of the EPRP Data Advisory Working Group and develop a draft Terms of Reference for the group. Share the list of 22 outcomes and Indicators with them. 	Between October, 2020 and February, 2021
7	Policies and procedures for data governance, which could inform the design of the program, are not established.	<ul style="list-style-type: none"> Begin to identify members of the EPRP Data Governance Working Group and develop a draft Terms of Reference for the group. Share this PPIA with this group. 	Between October, 2020 and February, 2021

PPIA Review Date: March 5, 2019

Note: *In accordance with Privacy Management Best Practices, this PPIA is an evergreen document and will be revisited and updated regularly as the project or initiative progresses, changes, evolves or winds down.*

H. Approvals

Completed by:



ATIA - 19(1)

March 5, 2019

Greg Lypowy
Associate
DAVIS PIER

Date

Reviewed by:



March 5, 2019

Privacy Officer
Tammy (Crowder) Wilson, MURP, MCIP
Chief Administrative Officer
Town of Bridgewater

Date



March 5, 2019

Greg Goubko
Energy Finance and Development Coordinator
Town of Bridgewater

Date

Karlie Gurski
Investigator
Office of the Information and Privacy Commissioner for Nova Scotia

Date

Appendix A: Outcomes and Indicators for the Energy Poverty Reduction Program

The following is the list of desired *outcomes* that form the foundation of the design of the Energy Poverty Reduction Program. Each outcome has an associated *indicator* that will be used to monitor the progress of the program in achieving the outcome.

Outcome Description	Indicator
1. Increase energy security for residents	Amount of time households at risk are unable to meet their home energy needs
2. Reduce and stabilize energy expenses for residents	<ul style="list-style-type: none"> • Spending on shelter by households at risk • Consistency of seasonal shelter costs for households at risk
3. Improve relationship between tenants and landlords	Self-assessment rating by households at risk and their landlords
4. Improve residential energy management practices	Energy savings resulting from energy management practices
5. Reduce greenhouse gas (GHG) emissions	GHG emissions from homes
6. Improve residents' mobility	<ul style="list-style-type: none"> • Distance to active transportation and public transportation routes from the homes of households at risk • Self-assessment rating by households at risk
7. Improve residents' access to community services	TBD
8. Increase residents' income	Earnings from participation in energy systems
9. Improve community service delivery efficiency and effectiveness	Self-assessment rating by community service organizations
10. Shift community service spending toward systemic solutions	Money spent making emergency energy payments on behalf of clients, compared to other areas of support
11. De-risk affordable energy investments in the community	TBD
12. Successfully fund energy poverty reduction solutions	Dollars invested into capital improvements and the energy poverty reduction program
13. Demonstrate feasibility and effectiveness of program	Achievement of outcomes, evaluation by partners and participants
14. Reduce energy poverty rate	Number of households living in energy poverty
15. Improve health of residents	<ul style="list-style-type: none"> • Population health indicators (TBD) • Household health indicators (TBD)
16. Increase residents' quality of life	TBD
17. Increase residents' sense of empowerment and inclusion	TBD

18. Inspire structural energy poverty solutions at the Provincial and Federal levels	Number of government policies or programs that have been influenced by the Bridgewater model
19. Inspire other communities to adopt energy poverty reduction efforts	Number of other communities in Canada that attribute all or part of their energy poverty reduction efforts to the Bridgewater model
20. Reduce energy poverty rate	Number of households living in energy poverty
21. Reduce poverty	Number of households living in core housing need
22. Increase residents' participation in the green economy	Earnings from employment in the clean tech sector

Appendix B: Selected References

The following is the list of selected references from research conducted by the Town of Bridgewater and the Nova Scotia Health Authority in support of the Energy Poverty Reduction Program:

1. Multiple Impacts of Household Energy Efficiency: <https://energyconsumersaustralia.com.au/wp-content/uploads/Multiple-Impacts-of-Energy-Efficiency-An-Assessment-Framework.pdf>
2. Health Impact Assessment of Housing Improvements: A Guide
Scottish Health and Inequalities Impact Assessment Network: https://www.scotphn.net/wp-content/uploads/2015/10/2013_02_26_HIA_of_Housing_Improvements_Guide1.pdf
3. The health impacts of energy performance investments in low-income areas: a mixed-methods approach
<https://orca.cf.ac.uk/110397/1/3013325.pdf>
4. Fuel poverty: the problem and its measurement <https://core.ac.uk/download/pdf/221533.pdf>
5. Better housing, better health in London Lambeth : the Lambeth Housing standard health impact assessment and cost benefit analysis <http://shura.shu.ac.uk/18864/1/Abrose-BetterHousingBetterHealth%28VoR%29.pdf>
6. Housing conditions and risk of physical function limitations: a prospective study of community-dwelling older adults <https://academic.oup.com/jpubhealth/article/40/3/e252/4812607?searchresult=1>
7. Costs and outcomes of improving population health through better social housing: a cohort study and economic analysis <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC5668333/>
8. Health Impact Assessment of Housing Improvements: A Guide Scottish Health and Inequalities Impact Assessment Network: https://www.scotphn.net/wp-content/uploads/2015/10/2013_02_26_HIA_of_Housing_Improvements_Guide1.pdf
9. Multiple Impacts of Household Energy Efficiency: An Assessment Framework
<https://energyconsumersaustralia.com.au/wp-content/uploads/Multiple-Impacts-of-Energy-Efficiency-An-Assessment-Framework.pdf>
10. Social and health outcomes following upgrades to a national housing standard: a multilevel analysis of a five-wave repeated cross-sectional survey
https://www.ncbi.nlm.nih.gov/pmc/articles/PMC5712147/pdf/12889_2017_Article_4928.pdf
11. Home Rx: The Health Benefits of Home Performance - A Review of the Current Evidence
<https://betterbuildingssolutioncenter.energy.gov/sites/default/files/attachments/Home%20Rx%20The%20Health%20Benefits%20of%20Home%20Performance%20-%20A%20Review%20of%20the%20Current%20Evidence.pdf>
12. Occupant Health Benefits of Residential Energy Efficiency
<https://e4thefuture.org/wp-content/uploads/2016/11/Occupant-Health-Benefits-Residential-EE.pdf>
13. The short-term health and psychosocial impacts of domestic energy efficiency investments in low-income areas: a controlled before and after study
https://www.ncbi.nlm.nih.gov/pmc/articles/PMC5282634/pdf/12889_2017_Article_4075.pdf
14. Warm Front Better Health: Health Impact Evaluation of the Warm Front Scheme
http://shura.shu.ac.uk/18167/1/CRESR_WF_final%2BNav%2520%282%29.pdf
15. Selecting Indicators to Measure Energy Poverty
<https://ec.europa.eu/energy/sites/ener/files/documents/Selecting%20Indicators%20to%20Measure%20Energy%20Poverty.pdf>
16. Marmot Review Team. (2011). The Health Impacts of Cold Homes and Fuel Poverty. London: Friends of the Earth and the Marmot Review Team
https://friendsoftheearth.uk/sites/default/files/downloads/cold_homes_health.pdf

Appendix C: Sample Privacy Protection Schedule

The following is an example of the Privacy Protection Schedule that the Town will include in all of its contracts with participants, partners and others.

Schedule E – Privacy Protection Schedule

Definitions

1. In this Schedule,
 - (a) “**access**” means disclosure by the provision of access;
 - (b) “**Act**” means the *Freedom of Information and Protection of Privacy Act*;
 - (c) “**contact information**” means information to enable an individual at a place of business to be contacted and includes the name, position name or title, business telephone number, business address, business email or business fax number of the individual;
 - (d) “**personal information**” means recorded information about an identifiable individual, other than contact information, collected or created by the Contractor as a result of the Agreement or any previous agreement between the Province and the Contractor dealing with the same subject matter as the Agreement but excluding any such information that, if this Schedule did not apply to it, would not be under the “control of a public body” within the meaning of the Act; and
 - (e) “**privacy course**” means the Province’s online privacy and information sharing training course.

Purpose

2. The purpose of this Schedule is to:
 - (a) enable the Province to comply with the Province’s statutory obligations under the Act with respect to personal information; and
 - (b) ensure that, as a service provider, the Contractor is aware of and complies with the Contractor’s statutory obligations under the Act with respect to personal information.

Collection of personal information

3. Unless the Agreement otherwise specifies or the Province otherwise directs in writing, the Contractor may only collect or create personal information that is necessary for the performance of the Contractor’s obligations, or the exercise of the Contractor’s rights, under the Agreement.
4. Unless the Agreement otherwise specifies or the Province otherwise directs in writing, the Contractor must collect personal information directly from the individual the information is about.
5. Unless the Agreement otherwise specifies or the Province otherwise directs in writing, the Contractor must tell an individual from whom the Contractor collects personal information:
 - (a) the purpose for collecting it;
 - (b) the legal authority for collecting it; and
 - (c) the title, business address and business telephone number of the person designated by the Province to answer questions about the Contractor’s collection of personal information.

Privacy Training

6. The Contractor must ensure that each person who will provide services under the Agreement that involve the collection or creation of personal information will complete, at the Contractor’s expense, the privacy course prior to that person providing those services.

7. The requirement in section 6 will only apply to persons who have not previously completed the privacy course.

Accuracy of personal information

8. The Contractor must make every reasonable effort to ensure the accuracy and completeness of any personal information to be used by the Contractor or the Province to make a decision that directly affects the individual the information is about.

Requests for access to personal information

9. If the Contractor receives a request for access to personal information from a person other than the Province, the Contractor must promptly advise the person to make the request to the Province unless the Agreement expressly requires the Contractor to provide such access and, if the Province has advised the Contractor of the name or title and contact information of an official of the Province to whom such requests are to be made, the Contractor must also promptly provide that official's name or title and contact information to the person making the request.

Correction of personal information

10. Within 5 Business Days of receiving a written direction from the Province to correct or annotate any personal information, the Contractor must annotate or correct the information in accordance with the direction.
11. When issuing a written direction under section 10, the Province must advise the Contractor of the date the correction request to which the direction relates was received by the Province in order that the Contractor may comply with section 12.
12. Within 5 Business Days of correcting or annotating any personal information under section 10, the Contractor must provide the corrected or annotated information to any party to whom, within one year prior to the date the correction request was made to the Province, the Contractor disclosed the information being corrected or annotated.
13. If the Contractor receives a request for correction of personal information from a person other than the Province, the Contractor must promptly advise the person to make the request to the Province and, if the Province has advised the Contractor of the name or title and contact information of an official of the Province to whom such requests are to be made, the Contractor must also promptly provide that official's name or title and contact information to the person making the request.

Protection of personal information

14. The Contractor must protect personal information by making reasonable security arrangements against such risks as unauthorized access, collection, use, disclosure or disposal, including any expressly set out in the Agreement.

Storage and access to personal information

15. Unless the Province otherwise directs in writing, the Contractor must not store personal information outside Canada or permit access to personal information from outside Canada.

Retention of personal information

16. Unless the Agreement otherwise specifies, the Contractor must retain personal information until directed by the Province in writing to dispose of it or deliver it as specified in the direction.

Use of personal information

17. Unless the Province otherwise directs in writing, the Contractor may only use personal information if that use is for the performance of the Contractor's obligations, or the exercise of the Contractor's rights, under the Agreement.

Disclosure of personal information

18. Unless the Province otherwise directs in writing, the Contractor may only disclose personal information inside Canada to any person other than the Province if the disclosure is for the performance of the Contractor's obligations, or the exercise of the Contractor's rights, under the Agreement.
19. Unless the Agreement otherwise specifies or the Province otherwise directs in writing, the Contractor must not disclose personal information outside Canada.

Notice of foreign demands for disclosure

20. In addition to any obligation the Contractor may have to provide the notification contemplated by section 30.2 of the Act, if in relation to personal information in the custody or under the control of the Contractor, the Contractor:
- (a) receives a foreign demand for disclosure;
 - (b) receives a request to disclose, produce or provide access that the Contractor knows or has reason to suspect is for the purpose of responding to a foreign demand for disclosure; or
 - (c) has reason to suspect that an unauthorized disclosure of personal information has occurred in response to a foreign demand for disclosure

the Contractor must immediately notify the Province and, in so doing, provide the information described in section 30.2(3) of the Act. In this section, the phrases "foreign demand for disclosure" and "unauthorized disclosure of personal information" will bear the same meanings as in section 30.2 of the Act.

Notice of unauthorized disclosure

21. In addition to any obligation the Contractor may have to provide the notification contemplated by section 30.5 of the Act, if the Contractor knows that there has been an unauthorized disclosure of personal information in the custody or under the control of the Contractor, the Contractor must immediately notify the Province. In this section, the phrase "unauthorized disclosure of personal information" will bear the same meaning as in section 30.5 of the Act.

Inspection of personal information

22. In addition to any other rights of inspection the Province may have under the Agreement or under statute, the Province may, at any reasonable time and on reasonable notice to the Contractor, enter on the Contractor's premises to inspect any personal information in the possession of the Contractor or any of the Contractor's information management policies or practices relevant to the Contractor's management of personal information or the Contractor's compliance with this Schedule and the Contractor must permit, and provide reasonable assistance to, any such inspection.

Compliance with the Act and directions

23. The Contractor must in relation to personal information comply with:
- (a) the requirements of the Act applicable to the Contractor as a service provider, including any applicable order of the commissioner under the Act; and
 - (b) any direction given by the Province under this Schedule.

24. The Contractor acknowledges that it is familiar with the requirements of the Act governing personal information that are applicable to it as a service provider.

Notice of non-compliance

25. If for any reason the Contractor does not comply, or anticipates that it will be unable to comply, with a provision in this Schedule in any respect, the Contractor must promptly notify the Province of the particulars of the non-compliance or anticipated non-compliance and what steps it proposes to take to address, or prevent recurrence of, the non-compliance or anticipated non-compliance.

Termination of Agreement

26. In addition to any other rights of termination which the Province may have under the Agreement or otherwise at law, the Province may, subject to any provisions in the Agreement establishing mandatory cure periods for defaults by the Contractor, terminate the Agreement by giving written notice of such termination to the Contractor, upon any failure of the Contractor to comply with this Schedule in a material respect.

Interpretation

27. In this Schedule, references to sections by number are to sections of this Schedule unless otherwise specified in this Schedule.
28. Any reference to the "Contractor" in this Schedule includes any subcontractor or agent retained by the Contractor to perform obligations under the Agreement and the Contractor must ensure that any such subcontractors and agents comply with this Schedule.
29. The obligations of the Contractor in this Schedule will survive the termination of the Agreement.
30. If a provision of the Agreement (including any direction given by the Province under this Schedule) conflicts with a requirement of the Act or an applicable order of the commissioner under the Act, the conflicting provision of the Agreement (or direction) will be inoperative to the extent of the conflict.
31. The Contractor must comply with the provisions of this Schedule despite any conflicting provision of this Agreement or, subject to section 32, the law of any jurisdiction outside Canada.
32. Nothing in this Schedule requires the Contractor to contravene the law of any jurisdiction outside Canada unless such contravention is required to comply with the Act.

From: Leon de Vreede <Leon.deVreede@bridgewater.ca>
Sent: March 5, 2019 7:22 PM
To: SC / VI (INFC); Long, Alexander (INFC)
Cc: Tammy Crowder; Jessica McDonald
Subject: Final Proposal - Town of Bridgewater (2/2)
Attachments: Town of Bridgewater Final Pitch Video Transcript.pdf; Town of Bridgewater Long Text Descriptions.pdf

Dear Sir/Madam:

This email contains part 2 of 2 of the Town of Bridgewater's final submission to the Smart Cities Challenge in the \$5 million prize category. We are submitting 5 attachments in total.

Main Submission Components – see email 1 of 2.

Accessibility Materials

- **Long Text Descriptions** – a PDF file containing long text and alternative text descriptions from the final proposal. It is 8 pages in length. We understand that it is excluded from the page count.
- **Town of Bridgewater Final Pitch Video Transcript** – a PDF file containing a transcript of the final pitch video. It is 9 pages in length. We understand that it is excluded from the page count.

Kindly confirm receipt of these 2 emails, including their five (5) attachments.

Thank you,
Leon

Leon de Vreede, MCIP, LPP
Sustainability Planner
Planning Department



T: 902-541-4390
F: 902-543-6876
E: Leon.deVreede@bridgewater.ca

60 Pleasant Street
Bridgewater, NS B4V 3X9

Think green - print responsibly

Town of Bridgewater Final Application to the Smart Cities Challenge in the \$5M Prize Category

Long Text Descriptions of Tables, Charts, and Diagrams

Section 1: Vision

Vision Section: Tables		
Title	Identifier Code	Long Text Description
Systematic Levels of Energy Poverty Risk	Table 1.1	Energy poverty risk factors identified by our community at the household, neighbourhood, community, and broader systems level. A description is provided for each level of energy poverty risk denoting factors that can contribute to the likelihood of a household falling into energy poverty.
Targeted Energy Poverty Reduction Rate by Program Year	Table 1.2	The anticipated number and rate of households that will be lifted out of energy poverty over a 10-year time frame by fiscal year (2029-2030), along with the projected number of house-holds experiencing energy poverty, and overall population growth. The positive impact of our program is anticipated to be realized by some of our most vulnerable community members in the coming five years. Based on the current and projected future population of the community, our Challenge would mean lifting 350 households out of energy poverty by fiscal year 2024-25. The community would then be on track to cut its overall energy poverty rate in half by 2028, and by as much as 62% over a 10-year timeframe (by fiscal year 2029-30).
Anticipated Outcomes by Category	Table 1.3	Anticipated outcomes by category and their relation to outcomes outlined in the Town's initial application. The outcomes demonstrate a need for transformative change at all levels to lift our residents out of energy poverty.
Original and Revised Program Components	Table 1.4	The original program components outlined in Bridgewater's initial Smart Cities Challenge application compared to the revised program components outlined in Bridgewater's Smart Cities Challenge Finalist application. They are compared by theme and sub-program in relation to the revised program components by system. The program components as originally proposed are broken down by three core themes, and sub-programs. These three program categories and programs correlated to the systems of the revised program components.

Vision Section: Diagrams		
Title	Identifier Code	Alternative Text and Text Description
Core Design Innovations	Diagram 1.1	<p>Alternative Text: Core Design Innovation</p> <p>Text Description: The design of the Energy Poverty Reduction Program combines 3 innovative mechanisms to reduce risk of energy poverty including connecting technologies, coordinated access, and financial investment. This synergy drives systematic and continuous improvements to housing, transportation, and community services, thereby reducing energy poverty risk and improving many dimensions of community life.</p>
Energy Poverty Reduction	Diagram 1.2	<p>Alternative Text: Energy Poverty Reduction Program Architecture</p>

Program Architecture		Text Description: The Energy Poverty Reduction Program Architecture is an integrated set of 5 connected services, designed with universal transferability and application to other communities in mind. This includes the Coordinated Access System for program intake, the Housing Energy Management System for housing improvements, Community Energy Systems for community energy generation, the Mobility Improvement System for transportation service and infrastructure improvements, and the Investment System for project capitalization.
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Section 2: Performance Measurement

Performance Measurement: Tables		
Title	Identifier Code	Long Text Description
Program Phases, Core Costs, Contribution Conditions, and Households Served by Fiscal Year	Table 2.1	Program deployment will occur in four phases: Prototype Program Setup (2020-22), Prototype Program Testing & Refinement (2021-24), Final Program Activation (2024-25), and Program Maturity (2025-2030). The number of households served by the program are presented by program year. The years funded by the Smart Cities Challenge program are noted as 2020-25.
Coordinated Access Service Provision Activities and Outputs	Table 2.2	Several activities and outputs will occur in provision of the Coordinated Access System over 5 phases of our program and into the long term. This includes detailed program design, staff hiring and training, database setup, serve clients (2021 through 2030), IT system maintenance, communications and marketing.
Housing Energy Management System: Program Coordination and Administration Activities and Outputs	Table 2.3	Several activities and outputs will be required for the program coordination and administration of the Housing Energy Management System. Many activities will take place over the first five phases of the program to engage partners, establish human resources and technological infrastructure, procure and coordinate service suppliers, market, and program maintenance.
Community Energy Systems: Utility Grade Service Provision Activities and Outputs	Table 2.4	The Town will undertake several activities for the development of utility grade services for neighborhood and community scale energy system development in Bridgewater. These activities will occur over the 5 phases of the project and into the long-term. This includes several activities related to assessment, design, set-up or procurement, regulatory approval, database setup and ongoing management.
Community Energy Systems: Solar Garden Development Activities and Outputs	Table 2.5	For the creation of a community owned solar garden as part of a neighbourhood-scale energy system for the Energy Poverty Reduction Program, several activities are required to achieve desired outputs. These activities start in phase 2 of the program and continue into the long term. Activities in the early phase include design financing, consultation, permitting, and procurement, which lead into construction, database and IT systems set-up, commissioning, and ongoing operations and maintenance.
Mobility Improvement System: Program Coordination & Administration	Table 2.6	Program Coordination & Administration requires several activities and outputs to plan and implement transportation improvements in the community. In the first phase detailed program design, partnership development, and database setup will be undertaken. IT system maintenance beginning in the second phase and be ongoing. Community engagement,

Activities and Outputs		program administration, communications and marketing, and program evaluation and improvement will start in the first phase and will be ongoing.
Investment System: Municipal Capitalization System Activities and Outputs	Table 2.7	Municipal Capitalization System requires activities and outputs to achieve the core financial budgeting and capitalization services to the other program services. Early phases require detailed program design, database setup, staff hiring and training, and partnership development. Project financial planning and program evaluation and improvement will start in the first phase of the program and continue throughout. Reporting to funders and IT System Maintenance will start in the second phase of the program and continue into the long-term. The planning, confirmation and administration of funding will start in 2021 and continue to 2030.
Investment System: Financial Investment Vehicle Activities and Outputs	Table 2.8	Financial Investment Vehicle will complement the Municipal Capitalization System and is responsible for traditional financing (inclusive of community investments), cash disbursements through outcome-data shared by the municipal capitalization system, investing in energy poverty reduction program assets, and reporting to investors. Investment vehicle organization creation and/or service procurement will occur in the first two phases of the project to achieve the output of investment vehicle organization created. Administration & Reporting will start in the first phase of the project and continue into the long-term. The planning, selling, and administration of investment raises will start in 2021 and occur in every phase of the program to achieve targeted raises.
Overall Program Management: Evaluation Framework	Table 2.9	The Evaluation Framework looks at Overall Project Evaluation Priorities, Phase Specific Evaluation Priorities, Desired Outcomes, and Evaluation Outputs for Infrastructure Canada by each of the four phases of the project. The four project phases include Prototype Program Set-up, Prototype Program Testing and Refinement, Final Program Activation, and Program Maturity.
Program Outcome Indicators and Associated Measurement Methodologies, Sources and Tracking Systems	Table 2.10	Program outcome indicators and their associated measurement methodologies are organized by outcome category. Baseline year and value are provided for each indicator, in addition to the target year and value that is projected to be achieved as a result of the project. A detailed measurement methodology is described for each indicator. Each data source is also described, included the frequency of data collection. The Tracking Program or System is detailed for each outcome indicator.

Performance Measurement: Diagrams		
Title	Identifier Code	Alternative Text and Text Description
Energy Poverty Reduction Program Outcomes Logic Model	Diagram 2.1	<p>Alternative Text: Energy Poverty Reduction Program Outcomes Logic Model</p> <p>Text description: The Energy Poverty Reduction Program Outcomes Model shows how planned activities and outputs will result in intermediate and long-term outcomes. There are 13 intermediate outcomes which to be achieved by 2025. The cumulative impact of different combinations of the 13 intermediate outcomes will result in 4 secondary outcomes. There are 5 long term outcomes that are aimed to be achieved by 2030.</p>

Section 3: Governance

Governance: Diagrams		
Title	Identifier Code	Long or Short Text Description
Program Governance and Management	Diagram 3.1	<p>Alternative Text: Program Governance and Management Structure</p> <p>Text Description: The Energy Poverty Reduction Program governance and management structure clearly shows the relationships between entities that will play a role in carrying out the project. Town council plays the central governance role, by guiding the Chief Administrative Officer / Senior Management, and through council members sitting on the Energy Poverty Reduction Program Steering Committee. The Chief Administrative Officer / Senior Management play a broader management role in guiding the Community Development Department which oversees the Energy Poverty Reduction Program. The Energy Poverty Reduction Program is managed by the Energy Poverty Reduction Program Coordinator guided by a Technical Advisory Circle and the Energy Poverty Reduction Program Steering Committee. The Energy Poverty Reduction Program Steering Committee will be made of up council members, and representatives from project partner organizations and includes two sub-structures, an Ombudsperson and a Client Advisory Circle. The Energy Poverty Reduction Program Coordinator manages external Project Management for the Coordinated Access System which has a Household Navigator. The Energy Poverty Reduction Coordinator also manages Town of Bridgewater Project Management for the four core project systems. These systems include the Housing Energy Management System which has a Technical Navigator, who works through the Community Energy Systems, and Mobility Improvement System, and the Investment System, which has a Financial Coordinator.</p>

Section 4: Project Management

Project Management: Tables		
Title	Identifier Code	Long Text Description
Program Deployment Phases and Households Served by Program Year	Table 4.1	Program deployment will occur in four phases: Prototype Program Setup (2020-22), Prototype Program Testing & Refinement (2021-24), Final Program Activation (2024-25), and Program Maturity (2025-2030). The number of households served by the program are presented by program year. The years which are within Smart Cities Challenge program funded are noted as 2020-25.
Risk Assessment by Program	Table 4.2	Risks are assessed by different themes of the chapters in the application. identifies significant program risks based on the theme of specific chapters within this application, as well for the overall program. Each risk identified is assigned a probability and impact which are both measured on a relative scale of 1 (low), 2 (moderate), and 3 (high). A description, summary, and the Monitoring and Reporting framework is provided for each risk.
Program Feasibility Assessment and Criteria	Table 4.3	As a risk mitigation strategy, feasibility will be assessed based on 9 areas of program performance. The criteria are laid out for each area of program performance. Each program service will undergo a detailed feasibility review 6 months before the end of Phase 1 (October 2021), and 6 months before the

		end of Phase 2 (October 2023), so that overall program feasibility can be assured by Phase 3 (Final Program Activation).
Risk Mitigation Strategies and Options	Table 4.4	There are three broad risk management strategies: Establish Core Risk Management Structures & Processes, Confirm Feasibility of Program, which each have more specific sub-strategies, and Establish Continuous Monitoring & Improvement System. Course correction checkpoints are laid out for each broader strategy. There are several Risk Mitigation Options which are identified for each sub-strategy, and the broader strategy <i>Establish Continuous Monitoring & Improvement System</i> .

Section 5: Technology

Technology: Tables		
Title	Identifier Code	Long Text Description
Technology Implementation Plan: Energy Poverty Reduction (EPR) Project Connected Technology Solution Timeline	Table 6.1	The Technology Implementation Plan is laid out in four phases: Prototype Program Setup (2020-2022), Prototype Program Testing & Refinement (2021-2024), Final Program Activation (2024-2025), which occur within the Smart Cities Program and Funding, and the Program Maturity (2025-2030), after the Smart Cities Challenge has ended. The four phases occur for each connected technology solution, including the Municipal Enterprise Resource Planning (ERP) System, Energy Management Information System (EMIS), and the Real Time Operations (RTO) System.

Technology: Diagrams		
Title	Identifier Code	Alternative Text and Text Description
Municipal Enterprise Resource Planning Platform	Diagram 6.1	<p>Alternative Text: Municipal Enterprise Resource Planning Platform</p> <p>Text Description: The Municipal Enterprise Resource Planning Platform System (MEPRS) is a package of application software suites that support the common business processes, functions and data for the systems of record in an enterprise. The MERPS manages core information related to the services and solutions being provided by the Energy Poverty Research Program. The MERPS employs three core sub-systems, the Energy Management Information System (EMIS), Housing Energy Management System (HEMS), and the Mobility Improvement System (MIS).</p>
Energy Management Information System Overview	Diagram 6.2	<p>Alternative Text: Energy Management Information System Overview</p> <p>Text Description: An Energy Management Information System provides relevant information to key individuals and departments in municipalities, enabling them to improve energy performance, related energy use, cost and carbon footprint in a low-carbon economy. The EMIS is best characterized by its deliverables, features, elements and support. Deliverables include the early detection of poor energy solution performance, support for decision making and effective energy reporting. Features of an EMIS include: a user focused web-based dashboard, the collection of storage of energy and property-related data in a usable format, the calculation of effective targets for energy use, and comparison of actual consumption with these targets.</p>

		Elements include sensors, energy meters, hardware and software (these may already exist as process and business performance monitoring systems). Support refers to system services, future proofing of the technology and performance upgrades.
Real-time Operations Energy Management Cycle	Diagram 6.3	<p>Alternative Text: Real-time Operations Energy Management Cycle</p> <p>Text Description: Real-time Operations Energy Management Cycle The real time operations (RTO) system leverages the value of the program assets and coordinates its controls in real time. The two key parts of the RTO system are the supervisory control and data acquisition (SCADA) and the energy management system (EMS).</p>

Section 6: Data and Privacy

There are no tables, charts or diagrams for this section.

Section 7: Engagement

There are no tables, charts or diagrams for this section.

Section 8: Implementation Phase Requirements

There are no tables, charts or diagrams for this section.

Section 9: Financial

Financial: Tables		
Title	Identifier Code	Long Text Description
Energy Poverty Reduction Program Total Costs by Activity for each Program Year	Table 9.1	The Energy Poverty Reduction Program has four overall activities, Program Development, Program Operations and Administration, Capital Planning and Improvements without a return on investment, and Capital Planning and Improvements with a return of investment. Total costs for each program year are laid out for the first five years, and then the cumulative totals of the program from years 1-5, and the cumulative totals of year 6-10, followed by the grand total costs for each of the four activities over the ten-year program period.
Capitalization by Program for Each Program Year	Table 9.2	Capitalization for each program system is laid out for each program year starting in 2020 and ending in 2025. The total capitalization required for all systems by program is presented for each program year, along with cumulative capitalization of all five program years. The systems include Overall Program Management, Housing Energy Management System – Operations, Community Energy System, Mobility Improvement System, Investment System, and the Coordinated Access System.
Cost of Services for Coordinated Access System	Table 9.3	There are two programs which account for the cost of services for the Coordinated Access System, Partnership Coordination, and Coordinated Access Service Provision. These two programs are broken down into activities, for which there are two cost types, Program Operations & Administration, and Program Development. The total cost for each activity is broken down by program year from years 1-5, starting in 2020 until 2025. Activity costs are totaled for years 1-5, 6-10, and into grand totals. Total costs of the two programs are totaled by the two cost types and into program year totals.

Cost of Services for Housing Energy Management System	Table 9.4	There are three sub-programs which account for the cost of services for the Housing Energy Management System, Partnership Coordination and Administration, Housing Retrofits, and New Construction. Costs for Partnership and Coordination are broken down into activities, for which there are two cost types, Program Operations & Administration, and Program Development. Housing Retrofits and New Construction sub-programs are also broken down into activities. The total cost for each activity is broken down by program year from years 1-5, starting in 2020 until 2025. Activity costs are totaled for years 1-5, 6-10, and into grand totals. Total costs of the three sub-programs are totaled by the two cost types and into program year totals.
Number of Retrofits by Housing Archetype for Each Program Year	Table 9.5	There are 318 target homes to be served through the Housing Retrofit program. Homes are divided into 13 common 'archetypes', defined by the combination of building form, sub-type, age, and type of heating system by each program year. Retrofits are totaled for each program year, for programs years 1-5, 6-10, and into grand totals.
Cost of Services for Retrofit Activities by Program Year	Table 9.6	Cost of services for retrofit activities are presented including the capital planning and improvement costs for the 318 homes that are projected to enroll in the Housing Retrofit program. The cost type is specified for each program activity, either as No Financial Return on Investment, or With Financial Return on Investment. Costs are presented for each activity by each program year from 2021 to 2025, then for cumulate activity costs from program years 1-5, and 6-10, then as a grand total. The costs for all activities for each program year are also totalled.
Number of Newly Constructed Homes by Housing Archetype for each Program Year	Table 9.7	There are 32 target homes to be served through the New Construction Program which are broken down by housing archetype for each program year from 2020-2025. The cumulative number of target homes are presented for years 1-5, and years 6-10, along with the grand total of target homes over a 10-year period.
Cost of Services for New Construction Activities by Program Year	Table 9.8	The capital planning and improvement costs for the 32 homes that are projected to enroll in the New Construction program are projected for each new construction activity which are then described by one of two cost types, With Financial Return on Investment or No Financial Return on Investment. Costs are presented for each activity by each program year from 2021 to 2025, then for cumulate activity costs from program years 1-5, and 6-10, then as a grand total. The costs for all activities for each program year are also totalled.
Cost of Services for Community Energy Systems by Sub-Program for each Program Year	Table 9.9	Estimated service costs for the Community Energy Systems can be broken down into two sub-programs, Utility Grade Service Provision and Solar Garden Development. Each of these sub-programs can be broken into activities. These activities are described by cost type, and costs are presented for each activity by each program year from 2021 to 2025, then for cumulate activity costs from program years 1-5, and 6-10, then as a grand total. The costs for all activities for each program year are also totalled.
Cost of Services for Mobility Improvement System by Sub-	Table 9.10	Estimated service costs for the Mobility Improvement System broken down by sub-program which include, Program Coordination & Administration, Transit System Improvements, and Active Transportation Improvements. Each of these sub-programs can be broken into activities. These activities are

Program for each Program Year		described by cost type, and costs are presented for each activity by each program year from 2021 to 2025, then for cumulate activity costs from program years 1-5, and 6-10, then as a grand total. The costs for all activities for each program year are also totaled.
Cost of Services for Investment System by Sub-Program for each Program Year	Table 9.11	Estimated service costs for the Investment System can be broken down into two sub-programs which include the Municipal Capitalization System and the Financial Investment Vehicle. These sub-programs can be separated into activities. These activities are described by cost type, and costs are presented for each activity by each program year from 2021 to 2025, then for cumulate activity costs from program years 1-5, and 6-10, then as a grand total. The costs for all activities for each program year are also totaled.
Cost of Services for Overall Program Management by Sub-Program for each Program Year	Table 9.12	Estimated service costs for Overall Program Management involves one sub-program: Program Governance, Management, and Evaluation which has numerous activities. These activities relate to program governance, program management, program risk management and quality control, and performance measurement and evaluation. Each of the activities under the sub-program are described by cost-type, either program development or Program Operations & Administration. Costs are presented for each activity by each program year from 2021 to 2025, then for cumulate activity costs from program years 1-5, and 6-10, then as a grand total. The costs for all activities for each program year are also totaled.
Capitalization of Services by Source	Table 9.13	Capitalization sources for program services can be broken down into three main categories: No investor (direct cost recovery), Financial investor expecting full financial ROI, and, Specialized investor not expecting financial ROI. Each of these capitalization sources can be separated into more specific capitalization sources. Capitalization source projections are separated into years 1-5 (within the Smart Cities Challenge timeframe) and years 6-10 (Program Maturity) for each program service.
Proposed Use of Finalist Grant for Initial Application	Table 9.14	The Town's use of the finalist grant is separated into five different priority areas: increase capacity & knowledge, engage community, refine approach to technology & data, refine service delivery approach, and create final proposal. The costs for each of these priority areas are broken down by contributions from the Smart Cities Finalist Grant and Town of Bridgewater In-Kind contributions and they are summed for a total value for each priority. Total contributions from the Smart Cities Finalist Grant and Town of Bridgewater In-Kind contributions are summed individually, and together.
Actual Use of Finalist Grant	Table 9.15	The Town's use of the Smart Cities Challenge Finalist Grant is broken down by priority areas which include increase capacity & knowledge, engage community, refine approach to technology & data, refine service delivery approach, and create final proposal. Each priority area is further broken down into more specific spending priorities. The total Smart Cities Challenge grant allocations for each specific spending priority are broken down by consultants, resources, staffing, and a sub-total is provided for the total of these three costs for each specific spending priority. In-kind contributions are also broken down by Town of Bridgewater and external partners, and a sub-total is provided for the total of these two costs for each specific spending priority. A total value is then calculated using by summing both sub-totals.

Town of Bridgewater – Smart Cities
Video Transcript
March 5, 2019

Ref #	AUDIO	VIDEO
1	<p>00:00 MUSIC UP</p> <p>00:03 OVER MUSIC: DAVID MITCHELL, MAYOR, TOWN OF BRIDGEWATER: Bridgewater's a beautiful community with incredible scenery, amazing trails; it's also a very tightknit community that is protective of itself but at the same time very welcoming to others.</p>	<p>Aerial shot of BRIDGEWATER over the LaHave River.</p> <p>Aerial shot over BRIDGEWATER showing sailboats docked at PIJINUISQAK PARK, with crowds of people in attendance.</p> <p>DAVID MITCHELL, MAYOR, TOWN OF BRIDGEWATER in Town Hall office.</p> <p>WOODLAND GARDENS PARK in winter.</p> <p>TWO YOUTH walk through Woodland Gardens Park in winter.</p> <p>DAVID MITCHELL, MAYOR, TOWN OF BRIDGEWATER in Town Hall office.</p> <p>DRIVE-ALONG SHOT of street in Bridgewater.</p>
2	<p>00:13 RESIDENT KATIE RUSSELL: Bridgewater's an old town, there's a river that runs right through the middle of it. There's a lot of old homes that are nice to look at but they're not very energy efficient.</p>	<p>DRIVE-ALONG SHOT of street in Bridgewater.</p> <p>Aerial shot of OLD BRIDGE over LaHave River.</p> <p>RESIDENT KATIE RUSSELL on King Street.</p> <p>Large, older HOME in Bridgewater. TITLE: The average Bridgewater household spends about \$6500 per year on energy costs.</p>
3	<p>00:26 RESIDENT DEBBIE DEMONE: This house is not insulated. I mean, we are on our final payment of last winter's power bills.</p>	<p>Shot of fire burning through glass window of pellet WOOD STOVE.</p> <p>RESIDENT DEBBIE DEMONE points to CRACKED WINDOW.</p> <p>RESIDENT DEBBIE DEMONE and her husband, JOEY.</p>

4	00:36 LISE PETRIE, GUIDANCE COUNSELLOR : You might not see it on the surface but families are really struggling out there.	FAMILY walks up to their large, old house. LISE PETRIE, GUIDANCE COUNSELLOR in Bridgewater Mall.
5	00:41 TOWN OF BRIDGEWATER SUSTAINABILITY PLANNER, LEON DE VREEDE: Energy poverty is when people spend more than ten per cent of their available income on energy for their home and for their means for transportation. What it feels like to live in energy poverty, though, is just as important.	Aerial shot of DOWNTOWN BRIDGEWATER. TITLE: 38% of the population of Bridgewater experiences energy poverty. ELECTRIC POWER INFRASTRUCTURE; poles, wires, hardware. TOWN OF BRIDGEWATER SUSTAINABILITY PLANNER, LEON DE VREEDE in Bridgewater Town Hall office.
6	01:00 RESIDENT KATIE RUSSELL: It definitely put a strain on my parents' relationship and our relationship as a family. Not that there weren't good times but I think from the stress of living in energy poverty there were bad times we didn't need to have.	Aerial over MOBILE HOME PARK in Bridgewater. TITLE: Electricity rates have increased more than 70% from 2005 – 2015 (Province of Nova Scotia). Large, older HOMES in Bridgewater. RESIDENT KATIE RUSSELL on King Street.
7	01:15 RESIDENT DEBBIE DEMONE: Makes you feel ashamed.	RESIDENT DEBBIE DEMONE in her home.
8	01:21 MUSIC UP	Over LAHAVE RIVER in town. TITLE: Our community will lift its residents out of energy poverty, TITLE: starting by reducing the energy poverty rate by 20% by 2025.
9	MUSIC DOWN 01:27 TOWN OF BRIDGEWATER SUSTAINABILITY PLANNER, LEON DE VREEDE : This is an idea that can change not only this community but other communities in Canada, as well.	TOWN OF BRIDGEWATER SUSTAINABILITY PLANNER, LEON DE VREEDE in Town Hall office. TRAFFIC moving across Old Bridge.

	<p>In 2018 the town completed a Community Energy Investment Plan.</p> <p>The purpose of that plan is to lay out how can we have access to clean, affordable, secure sources of energy.</p> <p>We'll be working to improve the energy affordability and security of over 1100 homes and for all of our community's transportation systems.</p>	<p>Service group providers meet at TOWN OF BRIDGEWATER – SMART CITIES ENGAGEMENT EVENT, Lunenburg County Lifestyle Centre (LCLC).</p> <p>TOWN OF BRIDGEWATER SUSTAINABILITY PLANNER, LEON DE VREEDE leads a service group providers engagement session at LCLC.</p> <p>Residents, service group providers, landlords and property owners attend a HOUSING ENGAGEMENT SESSION at LCLC.</p> <p>TOWN OF BRIDGEWATER SUSTAINABILITY PLANNER, LEON DE VREEDE leads a Housing Engagement Session at LCLC.</p> <p>NOTES on a whiteboard at a community engagement session.</p> <p>TOWN PLANNER, JESSICA MCDONALD, speaks at a community engagement session.</p> <p>TOWN OF BRIDGEWATER SUSTAINABILITY PLANNER, LEON DE VREEDE in Town Hall office.</p> <p>Electric vehicle CHARGING STATIONS at LCLC.</p> <p>SENIOR WHEELS bus</p> <p>BRIDGEWATER TRANSIT bus at LCLC.</p>
10	<p>01:59</p> <p>DAVID MITCHELL, MAYOR, TOWN OF BRIDGEWATER : Being part of a growing community means that you're seeing new houses being built and that makes it very easy to forget that we have a lot of older housing stock in the town.</p>	<p>Wide aerial of BRIDGEWATER AND SURROUNDING AREA showing river and dense tree cover.</p> <p>DAVID MITCHELL, MAYOR, TOWN OF BRIDGEWATER in Town Hall office.</p> <p>Aerial shot of BRIDGEWATER HOMES. TITLE: 43% of Bridgewater residents live in rental housing (Statistics Canada)</p>

11	<p>02:14</p> <p>MAT DAVIS, CLEAN FOUNDATION: So the age of the homes in Bridgewater definitely prove to be a challenge. There can be a lack of existing infrastructure in the homes, so things like central heating systems and proper heating distribution throughout the home.</p> <p>In some homes you're able to create a kind of a cycle of investment in energy efficient upgrades.</p> <p>These upgrades can pay for themselves within a certain timeframe. Not only do they pay for themselves but they can also make the home more comfortable, create job opportunities and generally reduce overall impact on the environment and climate change as well.</p>	<p>Large, older home with APARTMENTS in Bridgewater.</p> <p>LARGE, OLDER HOME in Bridgewater.</p> <p>MAT DAVIS, CLEAN FOUNDATION in Town Hall office.</p> <p>Contractors install exterior INSULATION on a house.</p> <p>3-D MODEL OF HOUSE showing transition from such things as baseboard electric heating to heat pump, and new windows.</p> <p>MAT DAVIS, CLEAN FOUNDATION in Town Hall office.</p> <p>AERIAL VIEW of Bridgewater along the LaHave River.</p>
12	<p>02:46</p> <p>TOWN OF BRIDGEWATER SUSTAINABILITY PLANNER, LEON DE VREEDE: At the heart of the program is an intelligent energy management information system that connects directly to people's homes and helps them plan, cost out and monitor their home improvements, making energy more affordable and leaving more money to spend on what really matters.</p>	<p>CORE DESIGN INNOVATIONS MODEL – see Addendum.</p>
13	<p>03:03</p> <p>TOWN OF BRIDGEWATER SUSTAINABILITY PLANNER, LEON DE VREEDE: We have the opportunity to pool together groups of upgrades so that we can actually create investment opportunities for private investors that want to support those energy improvements within this community.</p>	<p>AERIAL VIEW of Bridgewater.</p> <p>TOWN OF BRIDGEWATER SUSTAINABILITY PLANNER, LEON DE VREEDE in Town Hall office.</p>

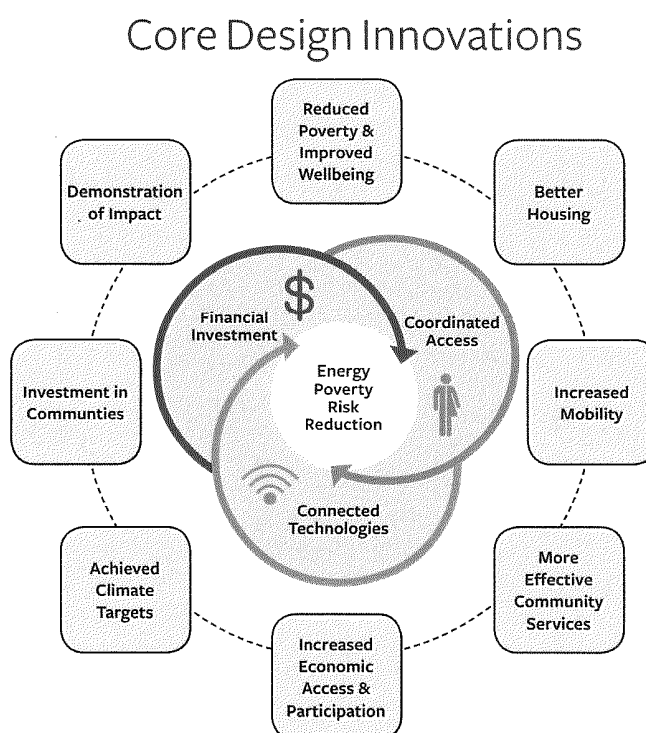
14	<p>03:21 TOWN OF BRIDGEWATER SUSTAINABILITY PLANNER, LEON DE VREEDE: The improved use of community data and connected technologies lifts people out of energy poverty by helping them navigate the community services and energy solutions that they require.</p> <p>By prioritizing our most vulnerable residents, we are creating positive outcomes for the entire community.</p>	<p>ENERGY POVERTY REDUCTION PROGRAM MODEL – see Addendum.</p> <p>BRIDGEWATER RESIDENT walks home from store with grocery bags.</p> <p>BRIDGEWATER RESIDENT arrives at apartment building carrying shopping bags.</p>
15	<p>3:42 NANCY GREEN, HEALTH PROMOTER, NOVA SCOTIA HEALTH AUTHORITY: I'm really inspired by the Bridgewater Town Council's prioritizing of energy poverty in this project to say, "We're going to do this."</p>	<p>VIEW FROM TOWN HALL OFFICE overlooking Old Bridgewater and east side of LaHave River.</p> <p>DAVID MITCHELL, MAYOR, TOWN OF BRIDGEWATER and TOWN OF BRIDGEWATER SUSTAINABILITY PLANNER, LEON DE VREEDE meet in the mayor's office.</p> <p>OPEN HOUSE community engagement event at LCLC.</p> <p>SUSTAINABILITY PLANNER LEON DE VREEDE speaks at Open House.</p> <p>DAVID MITCHELL, MAYOR, TOWN OF BRIDGEWATER speaks at Open House.</p> <p>NANCY GREEN, HEALTH PROMOTER, NOVA SCOTIA HEALTH AUTHORITY in Art Happening building, Bridgewater.</p>
16	<p>03:53 SECOND STORY WOMEN'S CENTRE, HELEN LANTHIER: I absolutely think that this will bring the community together and I think this is actually a concrete poverty reduction strategy.</p>	<p>SECOND STORY WOMEN'S CENTRE, HELEN LANTHIER speaks at service group providers workshop session.</p> <p>SECOND STORY WOMEN'S CENTRE, HELEN LANTHIER in Art Happening building, Bridgewater.</p>

17	<p>03:57</p> <p>TOWN OF BRIDGEWATER SUSTAINABILITY PLANNER, LEON DE VREEDE: The Smart Cities Challenge is allowing us as a community to focus on what the energy system of the future looks like, in this community, in a rural context, and to design that future in a way that we would otherwise not have access to.</p>	<p>TOWN PLANNING INTERN, NELSON NOLAN, helps lead community focus group session.</p> <p>FACILITATOR PATRICIA WATSON leads a community focus group session.</p> <p>TOWN PLANNING INTERN, NELSON NOLAN speaks at ENGAGEMENT SESSION at LCLC.</p> <p>FACILITATOR PATRICIA WATSON speaks at ENGAGEMENT SESSION at LCLC.</p> <p>TOWN OF BRIDGEWATER SUSTAINABILITY PLANNER, LEON DE VREEDE in Town Hall office.</p>
18	<p>04:18</p> <p>DAVID MITCHELL, MAYOR, TOWN OF BRIDGEWATER: So, instead of waiting for the next generation, the Smart Cities Challenge grant would allow us to tackle energy poverty and break that cycle in this generation.</p>	<p>AERIAL SHOT OF ELECTRIC BIKE going along King Street.</p> <p>ELECTRIC BIKE going along residential street.</p> <p>ELECTRIC BIKE going along park path.</p> <p>DAVID MITCHELL, MAYOR, TOWN OF BRIDGEWATER in Town Hall office</p>
19	<p>04:28</p> <p>RESIDENT KATIE RUSSELL: My hopes are that as an adult I can not end up the way my parents did, because that's also a hope they have for me.</p>	<p>CLUSTER OF POWER METERS on apartment building.</p> <p>RESIDENT KATIE RUSSELL on King Street.</p>
20	<p>04:36</p> <p>TOWN OF BRIDGEWATER SUSTAINABILITY PLANNER, LEON DE VREEDE: By investing in Bridgewater, Smart Cities can enable communities across this country to deal with both their poverty and climate crises at the same time.</p> <p>MUSIC UP</p>	<p>AERIAL of Bridgewater.</p> <p>ELECTRIC BIKE on King Street.</p> <p>ELECTRIC BIKE on residential street.</p> <p>TOWN OF BRIDGEWATER SUSTAINABILITY PLANNER, LEON DE VREEDE in Town Hall office.</p>

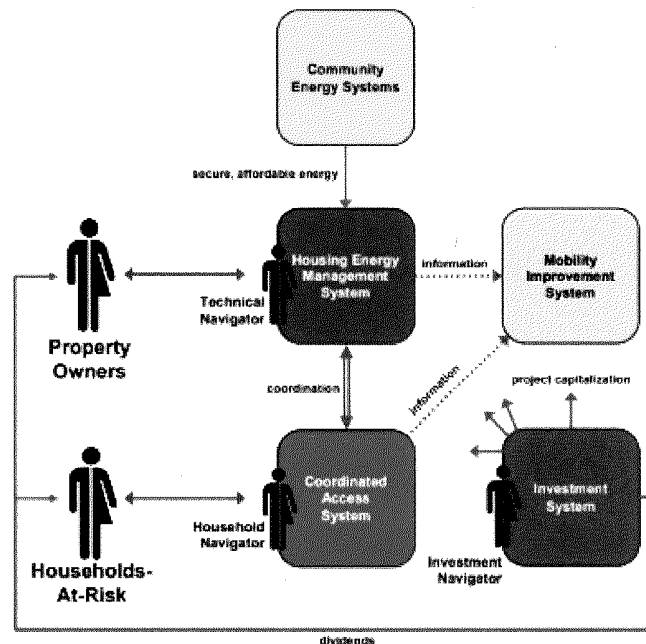
21	CREDITS 04:55	TOWN OF BRIDGEWATER'S SMART CITIES GRAPHIC – see Addendum. GOVERNMENT OF CANADA LOGO – see Addendum
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ADDENDUM

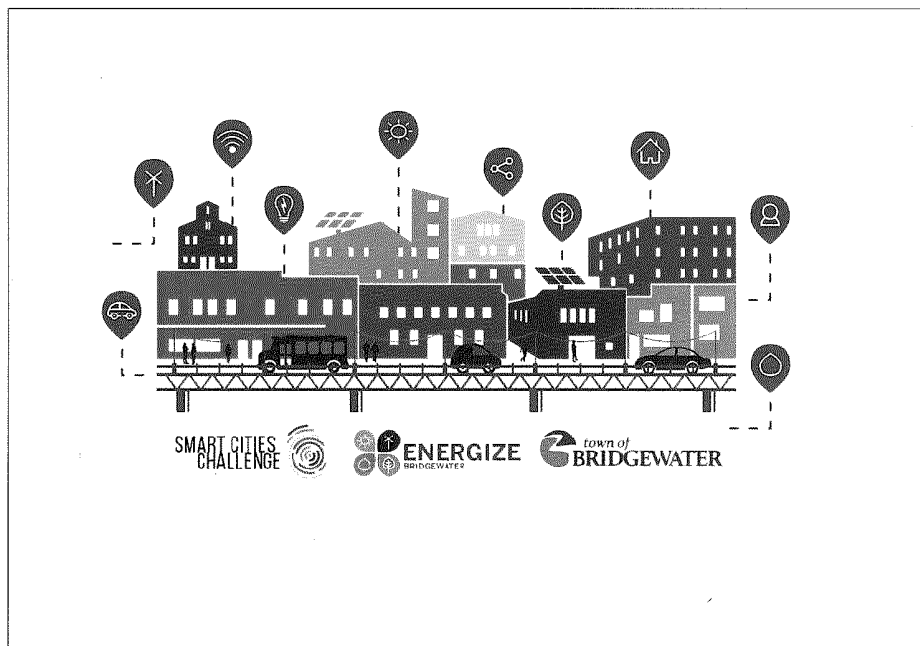
1. CORE DESIGNS INNOVATIONS MODEL



2. ENERGY POVERTY REDUCTION PROGRAM MODEL



3. TOWN OF BRIDGEWATER'S SMART CITIES GRAPHIC



4. GOVERNMENT OF CANADA LOGO

